

**THE  
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation  
INCORPORATING

**Railway Engineer • TRANSPORT • The Railway News**

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### DIESEL RAILWAY TRACTION SUPPLEMENT

The March issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

### GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

### NOTICE TO SUBSCRIBERS

Consequent on further paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of existing subscribers who do not renew their subscriptions.

Annual subscriptions are payable in advance and subscribers are advised to pay their renewal accounts before the expiration of the existing subscription, as the dispatch of copies will in all cases be stopped on expiration

### DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and machinery for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas.

### ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

### TO CALLERS AND TELEPHONERS

Until further notice our office hours are:

Mondays to Fridays 9.30 a.m. till 5.0 p.m.

The office is closed on Saturdays

## Great Southern Railways Directorate

A S briefly indicated last week, by virtue of an Order made by the Government of Eire under an Emergency Powers Order, the board of directors of the Great Southern Railways Company now consists of a Chairman appointed by the Government, and four directors representing the shareholders and elected in accordance with the provisions contained in the Order. The Chairman nominated by the Government is Mr. A. P. Reynolds, Managing Director of the Dublin United Transport Co. Ltd., and four members of the previous board, namely the Rt. Hon. James MacMahon (Dublin), Mr. James P. Goodbody (Limerick), Dr. W. Lombard Murphy (Dublin), and Major Hugh A. Henry (Dublin), have been elected to act as shareholders' directors. No decision of the new board may be arrived at without the concurrence of the Chairman, who alone shall constitute a quorum, and no meeting of the board shall be held unless the Chairman is present thereat. At each annual general meeting the shareholders are to elect two shareholders' directors who shall hold office for two years. The Government will fix the remuneration of the Chairman who will be paid out of the revenues of the company, and the shareholders' directors are to be paid at the same rates as before. The Chairman must not be a member of either the Dail or the Senate. These arrangements are to prevail for the duration of the emergency.

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## The Duration of the War

In the House of Commons on February 18 an interesting point was raised which is important in its bearing on a number of contracts, including that under which control of the railways has passed to the Government. The Attorney-General was asked whether he would, by legislative action or otherwise, produce a legal definition of the term, "For the duration of the war." Sir Donald Somervell said that so far as Government contracts were concerned this matter had been considered with a view to ensuring that words were used which would be free from ambiguity, and which would carry out the intentions of the parties. The Government did not consider it practicable, at any rate in present circumstances, to produce a legal definition which would satisfactorily dispose of the difficulties. He agreed that it was not quite clear what the parties intended in respect of all cases of private contracts in which such phrases were used. Different views might be held on when it might be said that the war had come to an end; in some contracts it might be quite clear that it was on the termination of hostilities, but on other contracts it might be plain that it was the legal end of the war by Order in Council. No decision had been arrived at in the case of the railway companies as to what was the end of the war. No reference was made in the House of Commons to various other factors which might complicate a decision as to the definition of the time at which the war might end. In the public mind it might be rather loosely concluded that the war ceases with the termination of hostilities, but obviously the mere conclusion of an armistice could not be taken to signify for legal purposes the end of the war. Further, in the present conflict it must not be overlooked that since the original declaration of war on Germany on September 3, 1939, there has been a considerable extension in the area and parties engaged in the war. An interesting position might arise in relation to some contracts if peace were to be achieved in Europe while war was still waged in other theatres.

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## A Popular Irish Railwayman Retires

The retirement of Mr. P. J. Floyd, Traffic Manager of the Great Southern Railways of Ireland since May 1, 1928, will remove from active service one of the most popular and best known officers of the Irish railways. Mr. Floyd joined the railway service 51 years ago and has enjoyed a strenuous career which has been marked by a consistent endeavour to provide the best service for the public. His relations with the travelling public and the trading interests which used his railway have always been happy; equally he has done good work both for his company and his colleagues. His work for the Railway Benevolent Institution will long be remembered.

His election as Chairman of that body in 1930 was in itself a tribute to the success which had already attended his enthusiasm for the work of the institution, for it was probably the first occasion on which an officer other than a General Manager had been selected for the position which had been held usually by the Chairman of the General Managers' Conference. The generous contributions which were regularly received from the Irish branch, and for which Mr. Floyd's energy and initiative were so largely responsible, became a matter of yearly comment at the meetings of the institution.

### Overseas Railway Traffics

The general improvement hitherto noted in Argentine railway traffics was not maintained during the 33rd and 34th weeks of the financial year. It is true that in that period the Buenos Ayres Great Southern registered an increase of 134,000 pesos, the Argentine North Eastern one of 59,500 pesos, and the Entre Rios one of 18,300 pesos. On the other hand, the Central Argentine has had a fall of 549,600 pesos during the fortnight. Its traffic was affected by three days' rain and the Carnival in the 34th week. The Buenos Ayres Western returns are down by 212,000 pesos in the two weeks, and those of the Buenos Ayres & Pacific by 206,000 pesos.

	No. of week	Weekly traffics	Inc. or decrease	Aggregate traffic	Inc. or decrease
Buenos Ayres & Pacific*	34th	1,805	-103	47,287	+2,979
Buenos Ayres Great Southern*	34th	2,860	+13	80,539	+9,166
Buenos Ayres Western*	34th	844	-85	28,693	+4,296
Central Argentine*	34th	1,718	-344	59,872	+9,710
Canadian Pacific	8th	869,800	+222,800	6,392,800	+1,443,400

\* Traffic returns in thousands of pesos

The San Paulo (Brazilian) Railway at the end of the 7th week of its financial year had secured receipts of £229,500, an improvement of £694 on the figure for the corresponding period of 1941. On the United of Havana the traffic for the 34 weeks of the financial year show an advance of £143,012.

### British Investments in Uruguayan Railways

The amount of British money invested in railways in the Republic of Uruguay, and represented by securities dealt in on the London Stock Exchange at the end of 1941 was £12,514,682 on which interest amounting to £70,649, or 0.5 per cent. was forthcoming; at the end of last year there was £10,986,692 of capital on which no interest was paid. These figures showed a slight improvement on those at the end of 1940 when the amount outstanding was £14,699,134 and interest was £66,649, or 0.4 per cent., and unremunerated capital amounted to £13,171,145. British investments on Uruguayan railways have not received an average return of 1 per cent. or more since 1935, and in the following year the yield was as low as 0.1 per cent., and £13,980,933 of capital received no return at all. From 1926 to 1929 inclusive the yield was 5 per cent. *The South American Journal*, which yearly compiles statistics relating to investments in the countries it covers, points out that as a whole the British owned railways did well up to 1930, although even then there were always small concerns which were never able to make any distribution to their junior stockholders.

### Swiss Railway Amalgamations

The announcement, in our February 26 issue, of the amalgamation of the Rhaetian Railways with two smaller lines, and the taking over by the former of the working of the Bernina Railway, is of considerable interest as illustrating the continued tendency of the private Swiss lines either to amalgamate or to operate jointly. Some years ago the Visp-Zermatt Railway (which already controlled the Gornergrat line) joined forces in this way with the Färka-Oberalp and Schöllenen Railways, bringing all four into a metre-gauge group with 96 miles of line. Now the fusion of the 173-mile Rhaetian system with the Chur-Arosa and Bellinzona-Mesocco lines, and the taking over of the Bernina operation, forms another metre-gauge group, of 247 miles in all. The two systems make an end-on junction at Disentis, and for some years before the war this was used in summer as the route of the longest through narrow-gauge journey in Swit-

zerland; the Glacier Express made possible a run of 167½ miles across the heart of Switzerland without change of carriage. The overall speed of this so-called "express" service was no higher than 16½ m.p.h., but this was easily explained by the severity of the gradients; the highest and lowest altitudes of the route were, in succession, 6,000, 1,995, 6,720, 4,740, 7,120, 2,140, and 5,415 ft., at the Albula tunnel, Reichenau, the Oberalp pass, Andermatt, the Färka tunnel, Visp, and Zermatt respectively. The Bernina line has the even greater altitude of 7,400 ft., on the Bernina pass, but finishes 6,000 ft. lower in the Val Tellina at Tirano.

### Electrified Railways in Norway

The aggregate route length of electrified railway in Norway at the present time is 495 km. (307 miles), and about 40 per cent. of the total railway traffic of the country is handled by electric traction. The electrified system comprises the lines from Oslo to Kornsjö (the frontier station with Sweden on the Oslo-Gothenburg line); the Oslo-Drammen-Kongsberg-Skien line, with the Notodden-Tinnoset branch; the branch from Voss to Eide off the Oslo-Bergen main line; the section between Oslo and Lilleström; and the Moel-Rjukan railway. These are all in the southern part of Norway. In addition, there is the electrified Ofotenbanen, the Norwegian section of the Swedish Lapland railway, extending from Narvik to Riksgränsen. It has now been announced that the Sörlandsbanen is to be electrified through-out; the section from Nordagutu to Neslandsvatn, some 75 km. (47 miles) in length is already being converted, as well as the 20 km. (12½ mile) section between Myrdal and Flåm. When the present electrification works are completed, electric traction will have been extended to about 15 per cent. of the Norwegian railway system. On the basis of pre-war traffic, it is estimated that electric train services will then entail a current consumption of 65,000,000 kWh, equivalent to 115,000 metric tons of coal a year. Electric locomotives for the Norwegian State Railways having a speed of 120 km. (74½ miles) an hour are now under construction, as well as electric railcars capable of a speed of 110 km. (68 miles) an hour.

### Swedish State Railways Electrification

The 1942-1943 budget of the Swedish State Railways allocates Kronor 14,000,000 for the second stage of the electrification programme now being carried out, as compared with Kronor 19,000,000 originally intended. This second stage comprises mainly the electrification of the lines Sundsvall-Ange (59 miles), Gävle-Ockelbo (24 miles), Hälsingborg-Hässleholm (48 miles), and Hälsingborg-Eslöv (31 miles). The budget reduction means that the work will be retarded, but still it is expected to be completed by the second half of 1943, or only six months later than originally planned. In view of the shortage of copper, the Swedish Industrial Commission declined to allot the quantities of copper required for the electrification (1,460 metric tons) but the State Railways are able to provide this from their own stocks. Kronor 13,000,000 is scheduled for 23 new electric locomotives, of which Kronor 6,000,000 is being allotted during the current financial year. The budget also includes Kronor 1,500,000 for new electric railcars, Kronor 7,600,000 for about 100 passenger vehicles and 1,450 wagons, and Kronor 10,000,000 for doubling main-line sections. The electrification of the last link of the northern main line (Stockholm-Boden) of the State Railway, the 89-mile section between Jörn and Boden, is now complete and the through working of electric trains between Stockholm and Boden (622 miles) was officially inaugurated at Boden in the presence of the Swedish Crown Prince on February 28; the regular electric service began on March 1. The route length of the electrified system of the Swedish State Railways is now 4,242 km. (2,636 miles), and the electric sections of the private systems bring the route length of all the electrified Swedish railways up to 4,836 km. (3,005 miles). The length of the electrified through line from Trelleborg in the south to Riksgränsen station (the last station on the Lapland railway close to the Swedish-Norwegian frontier) is 2,171 km. (1,349 miles).



### Railway War Damage

AS we surmised in our issue of February 20, the reports and accounts of the main-line railway companies for 1941 are similar in form to those issued last year and are very much abbreviated compared with pre-war practice. They do, however, contain important references to war damage which are of considerable interest, even if, for obvious reasons, they do not disclose any actual figures. The question of war damage is of such importance to railway shareholders generally that it is useful to recapitulate the alteration in the previous arrangements which followed the passing of the War Damage Act, 1941. The original financial arrangements with H.M. Government in connection with the control of railways outlined in the White Paper (Cmd. 6168) provided *inter alia* that the cost of restoring war damage up to a maximum of £10 millions in any one year was to be charged to the control account. When the Government introduced in the House of Commons last year the War Damage Bill dealing with compensation for war damage on a national basis, the Chancellor of the Exchequer stated on May 29 that, although railway undertakings in common with other public utility undertakings were excluded from the Bill, it was the intention of the Government to promulgate schemes for such undertakings, which would be grouped according to the nature of their operations. This decision was one of the main reasons which necessitated the revision of the then existing financial arrangements; the other was the Government's desire to cancel the arrangements for the adjustment of rates, fares, and charges to meet variations in working costs and other conditions arising from the war, in order to assist their policy of stabilising prices.

Lengthy negotiations preceded the conclusion of the new financial arrangements (Cmd. 2074) and terms of the Railway Control Agreement provide that no charge shall be made in the net revenue accounts of any accounting period after December 31, 1940, in respect of war damage. In this connection, however, it is of particular interest that Article 13(1) of the new agreement provides that the amount actually charged by the controlled undertakings to their net revenue accounts up to December 31, 1940, is to be retained by them and distributed amongst the undertakings in the proportions indicated in the agreement. No figures are given in the annual reports, or are likely to be given at the annual meetings, as to the amounts involved but this provision is undoubtedly of considerable benefit to the undertakings.

So far as the position after December 31, 1940, is concerned, the Chancellor of the Exchequer stated that he had framed the general lines of a scheme, but that before he could usefully introduce legislation he would need to assure himself of the practicability of certain aspects and to obtain information from public utility undertakings on a variety of technical matters, on which his information was then incomplete. He added that he proposed to ask representatives of the principal public utility companies to meet his advisers, following which he proposed to introduce legislation as soon as practicable. He subsequently circulated a short statement outlining the scheme he had in mind. This indicated that it was proposed that the aggregate contributions of the members of each group of public utility undertakings should be 50 per cent. of the estimated aggregate war damage payments to the members of the group, and that the contributions should be payable in four annual instalments of which the first would be due on July 1, 1942. It was further stated that the proposals, which apply to the first risk period ended on August 31, 1941, have been framed primarily with reference to the main group of public utility undertakings. It is assumed, therefore, that one group will comprise the controlled railway undertakings and their representatives, in fact, have already discussed the matter with Treasury officials. As will be appreciated, many technical and other problems are involved and, in the absence of any further statement by the Government, it is not possible to anticipate when the proposals will be finalised. As the revised agreement provides that the cost of restoring war damage is not to be charged to the control account after December 31, 1940, it follows that the controlled undertakings will have to bear the cost of the war damage contributions after that date.

The quantum of these payments depends upon the estimated aggregate war damage payments to the members of the particular group concerned during the period which ended on August 31, 1940. A further point is that the Chancellor of the Exchequer proposes to provide that as soon as possible after the termination of the war, the War Damage Commission should review the 50 per cent. rate and report whether it should be reduced having regard to the relative amount of damage suffered. In view of the various considerations involved, the boards of the controlled undertakings have reached the decision that provision for their liability for war damage is essentially a post-war problem. They add somewhat cryptically, however, that in the meantime, although no specific provision has been made for this liability in the accounts, its incidence has been borne in mind. There it would seem the matter must rest until the Government's proposals are sufficiently advanced to enable the railway boards to estimate their probable liability with some degree of accuracy.

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### Great Western Railway Company

THE full report and accounts of the Great Western Railway Company for the year 1941 are issued in the modified form which has been approved by the Ministry of War Transport since the war. It throws light on the attitude which has been adopted by the directors in respect of the liability for war damage contributions; it points out that the railway undertakings, in common with other public utility undertakings, are excluded from the general provisions of the War Damage Act, 1941, but the Chancellor of the Exchequer stated in the House of Commons on May 29, 1941, that it was the intention of the Government to promulgate schemes for public utility undertakings which are to be grouped according to the nature of their operations. It is understood that the contribution of the undertakings included in the railway group to war damage will be 50 per cent. of the total damage suffered by them, and that it is to be apportioned between them on a basis to be agreed. Negotiations are still taking place with the Government and at this stage it is not possible to give the proprietors any further information. The provision to be made for the liability of the company for war damage is essentially a postwar matter, and in the meanwhile, although no specific allocation has been made in the accounts, its incidence has been borne in mind. The report also records that the four main-line railway companies have concluded negotiations with the Custodian of Enemy Property for the acquisition of the share capital of Thomas Cook & Son Ltd., by Hay's Wharf Cartage Co. Ltd., in which the railway companies hold the controlling interest. It is desirable that the travel agency business of Cook & Son should be continued as a going concern, and the arrangement which has been made will also enable the railway companies to effect economies in connection with ticket booking facilities generally.

Results for the past three years are as follow :

	1939	1940	1941
	£	£	£
Total expenditure on capital account ...	187,377,822	188,087,111	188,484,231
Joint Lines—company's proportion of net revenue ...	147,083	142,273	142,273
Miscellaneous receipts (net) ...	*271,235	*272,799	*256,226
Net revenue ...	6,607,324	6,793,987	6,931,767
Interest on loans and debentures ...	1,649,855	1,649,854	1,649,855
Dividends on rent charge, guaranteed, and preference stocks ...	3,339,914	3,339,914	3,339,914
Balance after payment of preference dividends	1,617,555	1,804,219	1,941,998
Dividend on ordinary stock ...	1,502,541	1,717,189	1,717,189
Rate per cent. ...	3½	4	4
Appropriation to contingency fund ...	—	—	250,000
Surplus or deficit (+ or -) ...	+115,014	+87,030	-25,191
Balance brought forward from previous year ...	87,085	289,099	289,129
Balance carried forward to subsequent year ...	202,099	289,129	263,938

\* Other than those included in financial arrangements with Government

Net revenue for the year shows an advance of £137,780 at £6,931,767 and with the balance brought forward of £289,129 there is available, after appropriating £250,000 to contingency fund, £6,970,896 which compares with £6,996,086 a year ago, when no appropriation was made to the contingency fund. Interest on loans and debenture stocks again absorbs £1,649,855, and the dividends on rent charge, guaranteed, and preference stocks absorb £3,339,914. The balance available

for dividend on the ordinary stock is therefore, £1,981,127, which compares with £2,006,318 a year ago. The interim dividend of 1½ per cent. for the half year ended June 30, 1941, took £643,946, and the balance of £1,337,181 admits of the payment of a dividend of 2½ per cent. for the half year ended December 31, 1941, making a total of 4 per cent. for the year, the same rate as that which was paid for 1940. The balance carried forward is £263,938. Dividends on the ordinary stock for the past ten years have been as follow :—

1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
3%	3%	3%	3%	3%	4%	4%	3½%	4%	4%

Details of revenue receipts and expenditure of the whole undertaking are considerably curtailed by reason of a number of the items being included in the financial arrangements with the Government. It is shown that the company's appropriation of net revenue on jointly owned and leased lines for 1941 was £142,273, the same as for 1940. Miscellaneous receipts (net) from interest and dividends derived from investments in other undertakings amounted to £256,226 and compares with £272,799 for the previous year. This total is in respect of road transport undertakings together with the Penarth Pontoon, Slipway & Ship Repairing Co. Ltd. It is interesting to note that no return is made for dividends received from Carter Paterson & Co. Ltd. for 1941; for 1940 the yield on the investment in that undertaking was £2,737.

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### London Midland & Scottish Railway Company

THE full report which has now been issued is again in abbreviated form and recalls that a year ago reference was made to the proposals for insurance of war damage then before Parliament, and to the notification from the Government that these proposals would entail a modification of the financial agreement outlined in Command Paper 6168. Subsequently the Government decided to discontinue the provisions relating to the adjustment of railway charges, and this also entailed a modification of the financial agreement. The negotiations which ensued between the Minister of War Transport and the four main-line railway companies and the London Passenger Transport Board resulted in a revised draft agreement in which the principal modifications have already been made known. The report recalls that public utility undertakings, including railway undertakings, and their property are in general excluded from the operation of the War Damage Act, 1941, but the Chancellor of the Exchequer announced in the House of Commons on May 29, 1941, that it was the intention of the Government to promulgate schemes for public utility undertakings and that these would be grouped according to the nature of their operations. These schemes will provide the machinery for the contributions and payments to be made for war damage, and when settled will be incorporated in a Bill to be laid before Parliament. The intention is that the contributions of the undertakings included in the railway group shall not exceed 50 per cent. of the total war damage suffered by them and that the contributions shall be apportioned between them on a basis to be agreed. Negotiations are taking place with the Government on this matter, and it is not possible at this stage to give any further information. It is the view of the directors of the company, however, that provision for the ultimate liability for war damage is essentially a postwar problem and no specific provision has been made in the accounts for 1941, although in preparing them its incidence has been borne in mind.

Net revenue of the company amounted to £15,250,211, which is £543,511 more than for the previous year. After setting aside £4,000 for wartime contingencies, an increase of £100,000 on the figure for 1940, and meeting interest on debenture stocks, the balance available for dividend, including £166,135 brought forward from 1940, is £10,577,176. After payments at the full rates on the guaranteed and preference stocks, this will admit of a dividend of 2 per cent. on the ordinary stock and will leave a carry forward of £198,744. Dividends on the ordinary stock for the past ten years follow :—

1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
nil	nil	nil	nil	1½%	1½%	nil	1½%	1½%	2%

Results for the past three years are given below :—

	1939	1940	1941
Total expenditure on capital account ...	£ 460,462,477	£ 461,161,709	£ 462,204,750
Joint lines—Company's proportion of net revenue ...	189,960	112,725	112,725
Miscellaneous receipts (net) ...	*534,927	*503,081	*519,571
Net revenue ...	14,311,520	14,706,700	15,250,211
Interest on debenture stocks ...	4,439,170	4,439,170	4,439,170
Dividends on guaranteed and preference stocks ...	8,474,383	8,474,383	8,474,383
Balance after payment of preference dividends ...	1,397,967	1,493,047	2,336,658
Dividend on ordinary stock ...	1,428,037	1,428,037	1,904,049
Rate per cent. ...	1½	1½	2
Wartime contingencies ...	—	300,000	400,000
Surplus or deficit (+ or -) ...	-30,070	+65,010	+32,609
Balance brought forward from previous year ...	131,095	101,025	166,135
Balance carried forward to subsequent year ...	101,025	166,135	198,744

\* Other than those included in financial arrangements with Government

The report records the introduction into Parliament of a Bill to confer on the four main-line railway companies the powers necessary to give effect to arrangements for the acquisition by Hay's Wharf Cartage Co. Ltd., in which the main-line companies hold a controlling interest, for the whole of the share capital of Thomas Cook & Son Ltd. An application has been made by the company to the Secretary of State for Scotland for a Provisional Order to repeal the limit of time on the exercise of the company's powers to dredge the River Carron, and to repeal its obligation to maintain railway works on the closed Glenbuck and Spireslack to Muirkirk branches, and in certain events to reopen those branches for public traffic. The company's miscellaneous receipts (net), in which is included income from investments in road transport companies were £519,571 against £503,081. The chief factor in this increase was a rise from £96,433 to £273,139 in the receipts from investments in the Irish railways, although in general the road transport investments were also more remunerative. The amount of net revenue received by the company from the Northern Counties Railway (Ireland) was £244,246, compared with but £72,255 for the previous year.

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### London & North Eastern Railway Company

IN accordance with the requirements of the Ministry of War Transport, the financial accounts for the year 1941 are presented in a condensed form and the statistical returns are entirely suspended. Reference is made by the directors in their report to the revised financial arrangements with the Government which operated on and from January 1, 1941. The principal revisions are that :—(a) The net revenue of the pool (credit or debit) will be paid to or discharged by the Government and, in lieu of their participation in the pool, the controlled undertakings are to be paid by the Government fixed annual payments. In the case of this company the fixed annual payment is £10,136,355. (b) The cost of restoring war damage will not be charged to the control account. (c) The provisions relating to the adjustment of rates, fares, and charges will cease to have effect. (d) Before control comes to an end time will be given for the operation of any statutory machinery governing the level of charges, and the Standard Revenue of the company is noted as amounting to £15,216,735.

It is pointed out that the railway undertakings in common with other public utility undertakings are, in general, excluded from the operation of the War Damage Act, 1941, but that from the Chancellor of the Exchequer's statement to the House of Commons on May 29, 1941, it is the intention of the Government to promulgate schemes for public utility undertakings, grouping them according to the nature of their operations. The intention is that the contribution to war damage of the undertakings included in the railway group shall be 50 per cent. of the total war damage suffered by them, and that it is to be apportioned between them on a basis to be agreed. Negotiations are taking place with the Government and at this stage it is not possible to give any further information. In the view of the directors provision for the ultimate liability of the company for war damage is essentially a post war problem, and that in the meanwhile, no specific provision should be made, although its incidence has been borne in mind in dealing with the accounts for 1941.

As shown in the preliminary statement published in THE



RAILWAY GAZETTE of February 27, the net revenue for the year 1941 was £10,647,027, an increase of £296,035 in comparison with 1940. Adding the balance of £85,341 brought forward, makes a total of £10,732,368 available for distribution. After providing for all fixed charges and dividends on the guaranteed stocks, appropriating £300,000 to contingency fund, and meeting the dividends on the 4 per cent. first preference stock and the 5 per cent. redeemable preference stock (1955), there remains a balance of £1,657,552, which permits of a dividend of 2½ per cent. on the 4 per cent. second preference stock, leaving £86,675 to be carried forward. Dividend payments for the past 10 years are shown in the following table:—

	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
1st pref., 4% ...	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2nd pref., 4% ...	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
1st pref., 4% ...	1	2	3½	4	4	Nil	4	2	2	2½
Red. pref., 5% ...	1½	2½	4½	4½	5	5	Nil	5	5	5

The miscellaneous net receipts of £498,517 shown for 1941 include £470,196 dividends from associated bus companies, compared with £436,897 in 1940. They also include the following profits from goods road undertakings, namely £4,781 (same) from Currie & Co. (Newcastle) Ltd. and £21,665 (£22,706) from Hay's Wharf Cartage Co. Ltd. No profits are recorded from Carter Paterson & Co. Ltd., which in 1940 brought in £5,475. Results of the whole undertaking for the past three years are summarised in the accompanying table:—

	1939	1940	1941
Total expenditure on capital account ...	357,556,143	360,878,911	361,221,614
Joint lines—Company's proportion net revenue	484,729	350,558	350,558
Miscellaneous receipts (net) ...	464,835	470,459	498,517
Net revenue ...	9,271,030	10,350,992	10,647,027
Appropriation to contingency fund ...	—	250,000	300,000
Interest on loans and debenture stocks, etc. ...	4,217,560	4,215,907	4,214,637
Dividends on guaranteed and preference stocks	5,056,245	5,883,025	6,131,056
Balance after payment of preference dividends	Dr. 2,775	2,062	1,334
Balance brought forward from previous year...	86,054	83,279	85,341
Balance carried forward to subsequent year ...	83,279	85,341	86,675

\* Other than those included in financial arrangements with Government

The four main-line railway companies have completed negotiations with the Custodian of Enemy Property for the acquisition by Hay's Wharf Cartage Co. Ltd. (in which the main line companies hold a controlling interest) of the whole of the share capital of Thos. Cook & Son Ltd. the well-known tourist agency. The four main line companies are jointly guaranteeing the financial and other obligations which the cartage company will incur for the acquisition of these shares, and are also undertaking to provide it with the necessary finance. It is regarded as in the interests of the railway companies that this celebrated travel agency business should be continued as a going concern, and the main line companies will also be enabled to effect a rationalisation of their own ticket booking facilities. A joint Bill has been introduced by the main line companies into Parliament in the present Session to enable them to give effect to the arrangements above-mentioned. Construction has continued, as far as practicable, in the case of works with which it has been decided to proceed under the Railways (Agreement) Act, 1935, and the London Passenger Transport (Agreement) Act, 1935. The total sum expended under these heads up to December 31, 1941, was £3,310,200 under the Railways (Agreement) Act, and £6,706,095 under the London Transport (Agreement) Act. Of the sum of £5,929,811 deemed to have been borrowed by the company from the Railway Finance Corporation Limited, a further sum of £429,811 was taken up in 1941, which completes the amount of the loan.

### Southern Railway Company

THE report and accounts, which are again issued in wartime abridged form, confirm the net revenue and dividend announcements in the preliminary statement published in THE RAILWAY GAZETTE of February 27. The directors show that net revenue for the year 1941 amounts to £6,934,260. A revision of the original draft agreement embodying the financial arrangements arising out of the Government control of railways outlined on Command Paper 6168 became necessary

because of the contributory insurance scheme in the War Damage Act, 1941, and because of the Government's decision to stabilise transport costs including railway charges. Negotiations between the Minister of War Transport and the four main line companies resulted in an agreed revision as from January 1, 1941. The principal modifications are:—(a) The net revenue of the pool (credit or debit) will be paid to or discharged by the Government, and instead of sharing in the pool, controlled undertakings will receive fixed annual sums from the Government; (b) the charging of war damage (up to £10 millions in any year) to the net revenue accounts of the controlled undertakings will cease; (c) the provisions relating to the adjustment of rates, fares, and charges to meet variations in working costs will cease to have effect. The fixed annual sum payable to this company is £6,607,639, and in addition an annual sum of £300,000 representing interest on the £7,500,000 four per cent. debenture stock (1970-80) issued by the company in January, 1939, will be charged as an expense to the pool net revenue account. On the deferred ordinary stock the dividend for the whole year is 1½ per cent., leaving a balance of £101,336 to be carried forward. Dividends for the past ten years are given below:—

	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Pref. ordinary ...	1	3	4	5	5	5	5	5	5	5
Def. ordinary ...	Nil	Nil	Nil	Nil	½	1½	Nil	1½	1½	1½

Negotiations are taking place with the Government, which has expressed its intention to introduce further legislation for public utility undertakings (including railway undertakings) and their property, which are, in general, excluded from the operation of the War Damage Act, 1941. It is proposed to group these according to the nature of their operations. The intention is that the contributions of the undertakings included in the railway group shall be 50 per cent. of the total war damage suffered by them, and that the contributions shall be apportioned between them upon an agreed basis. No specific provision has been made in the accounts for 1941 for the company's ultimate liability in respect of war damage, but the liability has been taken into consideration in preparing the accounts. A joint Bill is being promoted by the four main line companies in the present Session of Parliament for conferring on them powers to give effect to arrangements made with Hay's Wharf Cartage Co. Ltd. for the acquisition of the whole of the issued share capital of Thos. Cook & Son Ltd. The total liability of the four main line companies under their guarantee to provide Hay's Wharf Cartage Co. Ltd., with the necessary finance will not exceed £450,000.

In the following table the chief financial items of the Company for each of the past 3 years are summarised:—

	1939	1940	1941
Total expenditure on capital account ...	174,430,455	174,834,658	174,973,903
Joint lines—company's proportion of net revenue ...	Dr. 36,696	Dr. 40,368	Dr. 38,914
Miscellaneous receipts (net) ...	161,809*	185,989*	191,291*
Net revenue ...	6,742,576	6,755,990	6,934,260
Interest on loans and debenture stocks, etc. ...	2,209,730	2,243,167	2,243,167
Dividends on guaranteed and preference stocks ...	2,751,278	2,751,278	2,751,278
Balance after payment of preference dividends ...	1,781,568	1,761,345	1,939,815
Dividend on ordinary stocks ...	1,772,958	1,772,958	1,930,409
Rate per cent.—			
Preferred ordinary ...	5	5	5
Deferred ordinary ...	1½	1½	1½
Surplus or deficit (+ or -) ...	+ 8,610	- 11,613	+ 9,406
Balance brought forward from previous year ...	94,933	103,543	91,930
Balance carried forward to subsequent year ...	103,543	91,930	101,336

\* Other than those included in financial arrangements with Government

Among the miscellaneous receipts are £21,680 (£22,721) from Hay's Wharf Cartage Co. Ltd., but no profits are recorded from Carter Paterson & Co. Ltd., which in 1940 brought in £5,475. The balance sheet shows that investments in Government securities have risen from £8,893,298 to £11,377,425 and in road transport undertakings from £1,939,425 to £1,989,425. For "other transport undertakings" the investment figure is £208,223, against £209,106. Investment in "other undertakings" has risen from £3,519,888 to £5,969,714.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Ministry of Supply Locomotives

Calle Nueva York 4773,  
Buenos Aires,  
Argentine Republic  
January 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was interested to see the illustrations and read the description of how petroleum burning apparatus has been applied to the standard Ministry of Supply 2-8-0 engines for service in the Middle East, in *THE RAILWAY GAZETTE* of November 7, 1941. On page 470, in the general arrangement view, a coil is shown at "A" for heating the oil to maintain or increase fluidity in the tank. A secondary coil is shown at "C." If these locomotives are worked in cold regions, I foresee some trouble as to the steady flow of petroleum from the tank because the petroleum, when heated, naturally rises and will not flow out at the exit. Under these conditions it is the cold sluggish oil which fills the supply pipe, and being heated only when it reaches the re-heater at "C," causes intermittent firing.

Experience has shown that even with flat coils placed immediately over the exit, a good flow of petroleum is not ensured in very cold weather, and the temperature of the whole tank has to be raised before a normal flow is attained. This is also true in the case when emptying the transport tanks into underground storage reservoirs, unless a very large heating coil is fitted which is sufficient to heat the whole of the tank fairly quickly. As far as I can see in the sketch, this has not been allowed for.

One remedy for this would be amply to enclose the coil on four sides, i.e. the top, two sides, and front (side of tank) and leave the back portion partly open at the bottom. This would have the effect of allowing the coil to heat a small portion of the petroleum at a time which it should do effectively.

Yours faithfully,

G. B. W. DOMINY

[The oil burning apparatus fitted to the 2-8-0 Ministry of Supply locomotive is, we are informed, of the same design as that fitted to the Iranian engines built by Beyer Peacock & Co. Ltd. a few years ago, and which are working very successfully both in the hot and cold regions of Iran; the only difference is that the heating coil on the 2-8-0 locomotives has 25 per cent. more heating surface.—ED. R.G.]

### Improved Sleepers in Wartime

8, Cornistoun Rise,  
Edinburgh, 10

February 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It was judicious to append "In wartime" to the title of the article appearing in *THE RAILWAY GAZETTE* of February 13, for I doubt whether some of the proposals, interesting and suggestive though they are, have much weight of experience behind them. Minor points can be left to individual judgment and trial, but considerable emphasis is laid on the reconstruction of old sleepers, as illustrated in Figs. 4, 6, and 7. My criticism of this is that, if any part of a sleeper is fit to be spliced, dovetailed, or flitched, then, in nineteen cases out of twenty it is more effective, and certainly cheaper, to use it as a whole. It can, for instance, be turned over or drawn through, and I do not think the objection to disturbing the crib is a valid one.

The same objection would apply equally to removal for reconditioning. I risk the charge of having an ulterior motive in my remarks if I refer to the remedy for "killed" chair fastenings published in *THE RAILWAY GAZETTE* of January 26, 1934. Some years before that I had ventured to predict that, by surrounding the neck with a non-rigid ferrule, rocking of the chair screws would develop under the repeated and severe lateral thrusts which occur on straight as well as curved track. Observation during the 13 years or more since I formed the opinion has fully confirmed it. It is the cumulative aggravation of this rocking which results in the demise of the fastening, just as, by the way, it accounted for the "necking" of the old spike and not the metal to metal contact which the wood ferrule was mistakenly intended to cure.

The movement can be avoided by using through bolts, to a greater or less extent depending on the care with which they

are kept tight. It can also be completely eliminated by making the fastening a close metal fit in the chair socket, as in the case of the screws made by the Rivet Bolt & Nut Company of Glasgow, and described in the article mentioned above. In support of this I am aware of a stretch of sleepers in which the chair screws expired after 7 years and which were then (1934) treated by substituting R.B.N. screws (of the larger of the two sizes in which they are made), in the old holes and nothing more. The point of this is that, although inserted in already elongated holes in middle-aged sleepers, the R.B.N. screws have survived and are still surviving longer than the original screws and ferrules used in the sleepers when new.

Yours faithfully,

REGINALD PETERS

Birmingham, 18

February 18

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to the article on "Improved Sleepers in Wartime" in your issue of February 13, the statement that a fibrous asbestos cement compound has proved superior to other methods both in economy and effectiveness is very much at variance with information in the possession of my company. Before the outbreak of war, exhaustive tests were carried out by an independent authority. It was then shown that the Metospir fastening was entirely advantageous.

A serious error in the article is the statement that Metospir is a steel band. Metospir is made of brass, and will not, therefore, rust after it has been set in the sleeper—an advantage which will be readily appreciated.

Metospir is designed to take the thread of the screw, and by means of a special tool is inserted into the sleeper ready to receive the chair screw. It is not, as your illustration seems to indicate, wound round the chair screw before insertion into the hole of the sleeper.

Yours faithfully,

W. F. BRAZENER,  
Managing Director,  
The Mint, Birmingham, Limited

### S.R. Blast Pipe Experiments

C.M.E.'s Dept., Southern Railway,  
Brighton

February 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—From the tone of "A Locomotive Engineer's" letter one would imagine that the series of experiments described in *THE RAILWAY GAZETTE* were the very first ever carried out by the Southern Railway, and the correspondent appears to have missed altogether the point as to their origin and purpose.

Experiments on conventional lines into smokebox arrangements have been going on from time to time ever since the formation of the company, and before that, by the constituent railways from their inception. These have included such variations in the smokebox as height, diameter, and shape of blast pipe orifice, diameter, length, and shape of chimney, the fitting and adjustment of petticoat pipes, deflector plates, etc., readings of vacuum being made by water gauges in various parts of the smokebox and ashpan, while observation was being kept on the effect upon the steaming and coal consumption.

The recent series represents a new and unconventional approach to the subject. Experiments Nos. 1 to 3 which "A Locomotive Engineer" describes as "obviously not worth trying," were deliberately undertaken with a view to starting boldly with an extreme condition and working inwards until a point was reached where satisfactory steaming was attained. Your correspondent goes on to say that "the idea of five small jets as compared to a solid unbroken steam cone from a single jet does not appeal to me as so efficient." This represents his own opinion and not his experience and overlooks the practices introduced with success by Lemaître in France and by various American railways in the way of multiple-jet or multiple-ported exhaust nozzles.

Apart from that, steam from the multiple jets presents a larger surface than that from a single jet, and yet in a later para-



graph he informs us that "it must be remembered the effective surface extracting the gases of combustion is the outside surface of the steam jet, not the core." Earlier he says that care must be taken that the steam cone fills the chimney, touching it about 6 in. from the outlet, hence we have the impossible position that the gases envelope the steam, forming an annulus in cross-section in the chimney, and yet the steam must touch the chimney 6 in. from the top. Apparently, what is meant is that when laid out on the drawing board lines representing a diverging jet from the orifice in the form of a cone to a theoretical angle of, say, 1 in 6, should make contact with the interior of the chimney at a given distance from the top, which is entirely an empirical rule. In practice the jet takes more the form of a paraboloid and shapes itself automatically with the volume of the gases encountered and the chimney diameter, whether large or small.

Finally, "A Locomotive Engineer" recommends the study of steam nozzles as used in turbines, notwithstanding that turbines work under constant conditions of pressure and superheat with clean steam, while the steam discharged from locomotive cylinders is intermittent and varies widely in pressure, superheat or wetness. Carbon deposit in the blast pipe would soon mar any refinements in the way of throats and diverging nozzles, and smokebox efficiency depending on such nicety would quickly be affected unless frequent cleaning was performed on the interior of the blast pipe for some distance down.

H. HOLCROFT

### "Flameproof Locomotives"

Hunslet Engine Works,  
Jack Lane, Leeds, 10  
February 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—We would refer to your comments under the heading "Flameproof Locomotives" on page 183 of THE RAILWAY GAZETTE dated February 6. We thoroughly endorse your remarks with reference to so-called "flameproof locomotives," the correct term for which is really "sparkproof."

As you are no doubt aware there are only two concerns in the world that have obtained approval by the Mines Department of this country after severe tests at Buxton Research Station and which are really entitled to describe their locomotives as "flameproof." You are, however, incorrect in stating that the battery locomotive is probably on a par with the diesel as regards danger from flames or high temperature sparks, and to justify this we would point out that the Mines Department permits approved "flameproof" diesel locomotives such as the "Hunslet Mines Type" to work in coal mines in the presence of firedamp, but it does not permit electric battery locomotives to work under similar conditions. Strictly speaking, batteries cannot be made "flameproof" on account of the hydrogen which they give off and up to date the Mines Department will not even accept a small battery on approved diesel locomotives for this reason. Any electrical equipment fitted, therefore, on the "flameproof" diesel locomotives has to work without a battery.

Yours faithfully,

For the Hunslet Engine Co. Ltd.,  
JOHN ALCOCK,  
Director

### Railway Carriage Seating

Preston,  
Lancashire,  
February 16

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article on railway carriage seating in THE RAILWAY GAZETTE issue of January 30 should add greatly to the comfort of the travelling public if it is read and assimilated and acted on by the people responsible for the design of railway rolling stock. A comfortable seat is of more real value to a passenger than is a streamlined locomotive or knocking ten minutes off the start to stop time of a 200-mile journey. As seats must be provided there seems no reason why they should not be made scientifically in the first place.

It is not always the most inviting looking seat that turns out to be the most comfortable, as I realised once to my cost. A few years before the war I had to journey from York to Whitley in the height of the holiday season, and I considered myself lucky to obtain, in the rush and crush, one of those high-backed, comfortable-looking, bucket seats in an L.N.E.R. third class saloon. Long before the train reached its terminus at the coast I bitterly regretted my choice and wished myself in one of the ordinary third class coaches. The train was hours late on that comparatively short journey (due to an engine breakdown necessitating single line working): the day was as hot as an

English August day can be; and the restaurant car ran out of all kinds of liquid refreshment.

I cannot believe that the designers of those lovely bucket seats ever sat in one for more than five minutes. Your contributor could not have found a better example of a badly designed seat, without any support for the small of the back, nor have demonstrated it better than by causing a passenger to sit in it under such conditions.

Yours truly,

LANCASTRIAN

[We sent a proof of this letter to another correspondent who has written the letter given below.—ED. R.G.]

London

February 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Although all my sympathies are with "Lancastrian" in his unhappy experience with a bucket seat, I find it difficult to join in the abuse that he levels against this familiar article of furniture. Singularly enough, on a certain wartime journey from King's Cross, when I found all the first class compartments filled to repletion, there was one of these bucket seat cars near the front of the train that was nearly empty—a curious inversion of things that is by no means unusual these days. Although I held a first class ticket, I repaired to this car, and ensconced myself in one of the "buckets"; and, I may add, I was astonished to find how comfortable it was. The tilt of the seat itself was correct, and there was support both for the small of the back and up the length of the back as well. No doubt I should have been less comfortable had we been sitting four at a table, but it would chiefly have been the discomfort of less leg room, whereas I am partial to sitting with my legs straight out in front when possible. Nature, we know, does not design the human frame on a standardised plan; my own particular example is on a generous rather than a skimpy scale, which by rights should make a bucket seat less comfortable rather than more. Of "Lancastrian's" particular contours I have no precise knowledge, but I cannot help feeling that the sting of his particular complaint is in the tail—the train "hours late," the day "hot as an English August day can be," and, yes, this above all, the restaurant car "out of all kinds of liquid refreshment."

Yours faithfully,

VERITAS

### On Classifying Locomotives by Symbols

390, Wakefield Road,  
Huddersfield

February 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article written in THE RAILWAY GAZETTE of February 13 under this title by Mr. Ashley Brown is of great interest and his proposed notation is remarkably compact for the information it provides. I venture to suggest, however, that the numerical indices and the algebraic signs would be troublesome to printers, typists, and telephonists, and that the system might be modified to avoid this objection. For example, the designation might consist of:—

(1) Figure representing tractive effort classification. This is to be the next whole number below tractive effort in lb. divided by 5,000. Thus, for example, 30,000 lb. up to 34,999 lb. would be represented by 6. In this way the particular range of 5,000 lb. in which any tractive effort lies is determined by mental multiplication. A single figure suffices for any tractive effort up to 49,999 lb.

(2) Letter representing wheel diameter—

- A 6 ft. 6 in. and upwards.
- B 6 ft. 0 in. to 6 ft. 5½ in.
- C 5 ft. 6 in. to 5 ft. 11½ in.
- D 5 ft. 0 in. to 5 ft. 5½ in.
- E Below 5 ft. 0 in.

The subdivision here is closer and more easily remembered than in the original proposal.

(3) Figure representing number of cylinders.

(4) Letter representing wheel arrangement according to the schedule already proposed.

The items (1) and (2) are the most important from the operating point of view and a locomotive that meets a particular requirement in those respects is not likely to be unsuitable on any other account.

Examples.

L.N.E.R.	Class A4	7A3F
L.M.S.R.	Class 8F	6E2H
G.W.R.	"Grange"	5C2E
S.R.	"School"	5A3A

It is not immediately obvious why Mr. Brown's proposal should compel 4-4-0 and 4-4-2 to share the letter A.

Yours faithfully,

W. A. TUPLIN

## THE SCRAP HEAP

Edison rose from being a newspaper-boy on trains to become one of the most prolific inventors of electrical devices. His first inventions were for his own convenience—a combination, for instance, of clock and sending mechanism which would send every half-hour the morse letter "A." He worked so steadily at night that he became drowsy by day and slack in his duty as train-checker, so the chief operator insisted that once every thirty minutes young Edison should send this signal. The little electrical device did this for him; so he slept peacefully between trains—until the day came when he was found out, and duly dismissed.

Shortly before Christmas a C.P.R. baggageman, Rene Andette, noticed a pair of feet dangling under a passenger coach of a train which was due to leave Windsor Station, Montreal, for New York, in less than five minutes. On investigation the feet were found to belong to an escaped Nazi who had hoped to leave the country in this way. He was found under the third coach of a train with his left arm tied to the air brake pipes with a piece of cord, and he was supported by a woollen scarf tied round his waist and a piece of cord attached to his waist and around the pipes. Andette was astounded to find it was a Nazi under the train and not just an honest-to-goodness "hobo." This is the tenth escaping German prisoner to be recaptured through the efforts of C.P.R. staff.

Recently a large lorry and trailer were racing towards a north-east port with a 16-ton mounting carrying a nest of pom-

poms for a vessel. Every minute counted, as this ship was due to join an Atlantic supply convoy as soon as its armament had been fitted. But as the lorry reached the summit of a steep hill, the weld of the steering turntable fractured. Perched precariously on the crest, the trailer was in grave danger of plunging headlong down the hill into a river. An Ordnance mechanical engineer passing by in his car immediately contacted an R.A.O.C. squad and recovery vehicle. They supported the trailer with railway sleepers. A new steering turntable was ordered and the squad worked through the night in the rain and cold until the new piece had been fitted by early dawn. The ship sailed on time, with its pom-poms.

In the early days of the Russo-German war, certain Russian troops were encircled by the rapidly-advancing Germans. Their commander divided his men and ordered each detachment to find its way back to its own retreating armies. One such detachment had among its number, a special correspondent of *Krasnaya Zvezda*, named A. Polyakov, whose diary was kept faithfully throughout the dangerous proceeding. He relates how on one occasion his party came to a main road used by the Germans. Nazi motorcyclists rode by until one man stopped, took out a map and studied it. One of the hidden Russian scouts explained that the road branched here, one part running parallel to the front line and the other bearing left to the German rear. It was obvious that the Nazi with the map was a traffic controller for, as some tanks approached, he flashed his torch and they took the road to the front. The Russian scout

wandered off during a lull and presently his companions heard a short scuffle. Two minutes later the traffic controller was at his post, swinging his torch to more tanks to move ahead to the left. For over an hour tanks and vehicles streamed by—at least 200 of them—down the road leading to their own rear. The confusion caused to the Nazis, the fuel wasted, the time lost, gave great joy to the Russians and incidentally afforded them an opportunity of crossing the road with their own guns and equipment.—Excerpts from "Life," by A. Polyakov.

### BLOW TO IT

The Fellowship of the Bellows is an organisation begun in Buenos Aires by a group of young British business men, and its object is to raise money to buy new planes for the R.A.F. Every month its members meet for a good time and pay their standard "blow-in" of one cent apiece

for every Axis plane brought down the previous month. The British Air Ministry obligingly cables the number of enemy planes destroyed during the month to them. Since its inception, just over a year ago, the number of members has grown to more than 60,000 Britons, Americans, and Latin Americans, and it is reported that in Buenos Aires and Montevideo alone about 1,000 is "blown in" every month. The funds go to the Ministry of Aircraft Production and aeroplanes so purchased bear a special insignia of a little hand bellows in a circle. The password is "Blow to it!" accompanied by the high sign—an upward spiralling motion of the right index finger.—From "The Kwanis Magazine."

An extract from "The Fact Book," which has been kept by the Divisional Engineer, Plymouth, G.W.R., and his predecessors for nearly a century.

Engineer's Office,  
Hawthorn House,  
Bath.  
December 2, 1865

S.D.R.

My dear Margary,

I have been testing carefully the three pieces of rail you sent. The crushed one is the same date as one that has not been used (which latter is a very fair quality though a little soft in the flanges). It is decidedly wrong in the head but from the appearance of the other of same date I know pretty well what has happened and that the defects are exceptional. The rail that broke in falling has a good head but the flanges are far too hard and an excess of fire has made the rail coldshort. The test and fracture together show this very clearly. There is more difficulty in keeping the makers regularly up to the mark for the small lots which have to intervene between the quantity of rubbish that some people seem to be satisfied to buy than if a good regular supply were on hand. It is a work of time and not always practicable to get changes from trash to a reasonably good quality.

What would be the most convenient day for you to meet me at B. Water.

Yours very truly,  
(sigd) T. E. Marsh

December 2, 1865

Experiments on rails received from Mr. Margary  
Rails 40c Rhymney Iron Company's make  
Expt.

No. 1 Part of a broken rail (unused)  
rolled March 1864 marked  
(3.64)  
bearing between supports 3 ft.  
Load applied on centre

T	C	deflection	0"
1	4		
2	16		1/16
5	0		1/16
7	10		5/16

Load removed the perm. set was 3/16 in. resumed

the load and increased to 8 10 fractured. The last deflection recorded = 1/4 in. Broke through bolt hole at 4 in. from centre.

No. 2 Rail unused  
Rolled October 1863 (marked 10-63)  
same conditions as No. 1.

T	C	deflection	1/16 in.
Load	T	4	
5	0		3/16 in.
7	10		1/2 in.

Load removed perm. set 1/2 in. Load resumed and increased to 8 10 rail bent 2 1/2 in. and fracture through one hole at 4 in. from centre on one flange only.

No. 3 Rail old and crushed (marked 10.63)

Load	T	C	deflection	1/2 in.
3	0			
5	0			3/16 in.
7	10			1/2 in. bare

(top of the rail being crushed the perm. set was not observed)  
T C  
8 10 applied rail bent as in No. 2 and fractured through hole in one flange in similar way.

## NORTH BRITISH RAILWAY.

Last Trip of the 26th Season of

## COOK'S POPULAR EXCURSIONS

TO

## SCOTLAND,

ON

Wednesday, September 20, 1871,

From CARLISLE (Citadel Station), by Ordinary Train at 8.5 a.m., by the  
WAVERLEY ROUTE, to

## EDINBURGH,

WITH BOOKINGS ALSO

## TO MELROSE,

Giving a choice of Returning on ANY DAY (except Sunday) up to and including Thursday, September 28th.

FARES THERE AND BACK:		1st Class.	3rd Class.
		s. d.	s. d.
From Carlisle (Citadel Station) to Edinburgh and back .....	17	0	8 5
From Carlisle to Melrose and back .....	5	3	3 6

Children above 3 and under 12 years of age, Half-fares. Tickets to be had at the Station only.

Luggage allowed—First Class, 112 lbs.; Third Class, 56 lbs.

PASSENGERS MAY RETURN by Ord. Trains leaving Edinburgh (Waverley Station) at 6.35 a.m., and 1.45 p.m., and Melrose at 8.19 a.m., and 3.12 p.m., on any week-day to September 28th; or by the Return Special Train to leave Edinburgh (Waverley Station) at 9.0 p.m., on Thursday, September 28th. The journey may be broken at Melrose and St. Boswell's in going or returning.

An advertisement from "Cook's Excursionist," dated  
September 6, 1871



## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

### NEWFOUNDLAND

#### New Rolling Stock

During October, 50 box cars ordered by the Newfoundland Railway were delivered and assembled in the railway shops. The second of five locomotives ordered in the United States also arrived and is being assembled. The other three locomotives were expected to be delivered during January.

### UNITED STATES

#### New C. & N.W. Streamliners

Reference was made in last week's issue to the entry into service on January 5 of the first of the five new streamlined trains of the Chicago & North Western RR. between Wyeville, Winona, and Mankato, running in connection at Wyeville with The 400 streamliner. On January 12 the remaining four of these trains went into service in the areas of Wisconsin north of Chicago, including the route along the west shore of Lake Michigan between Chicago, Milwaukee, Manitowoc, Green Bay, and Ishpeming on Lake Superior; the Milwaukee-Fond du Lac-Green Bay line, Chicago-Janesville-Madison, and Chicago-Beloit-Janesville-Fond du Lac. Whereas the Mankato service is worked by streamlined steam power, the other four trains have diesel-electric locomotives, and they are being worked jointly on rosters which cover 15 daily trips, each averaging 16 hr. in duration. The trains are made up of six vehicles each, including chair coaches, a parlour car, a dining car, and a combination baggage-mail-light refreshment car, and have made possible a considerable amplification of the C. & N.W. service in the most populous part of Wisconsin.

#### Toledo, Peoria & Western Strike

The threatened strike of Toledo, Peoria & Western employees took effect on December 28, when the enginemen and trainmen ceased work as a result of the company's announcement that on the following day it would put into effect new rates of pay, rules, and working conditions. The strike was called by the Brotherhood of Locomotive Firemen & Enginemen and the Brotherhood of Railroad Trainmen; the complaint was that the company did not recognise seniority as the sole basis of assignment of runs, and that by alterations in the basis of wage calculations, wages would be reduced under the new arrangement. The railway has requested the Mediation Board to appoint an Emergency Board, but the Mediation Board has replied by urging the railway to arbitrate. The T.P. & W. is a relatively small line running from Effner, about 80 miles south of Chicago, westwards to Peoria and Keokuk, 224 miles, with branches totalling 15 miles. The traffic carried is almost exclusively freight.

#### A New Santa Fe Cut-off

For some time the Atchison, Topeka & Santa Fe Railway, which has the most difficult, from the grading point of view, of all the trunk lines through the mountainous regions fringing the Pacific seaboard, has had under construction a new line from Farley to Colmor in New Mexico. If this eventually becomes the main line by diversion from the existing main line at Dodge City, and running west through Boise City and Farley, it will not only shorten the

distance from Chicago to Los Angeles by 67 miles, but will also cut out the heavy gradients over Raton pass, 7,622 ft. above sea level. In view of war conditions, however, the Interstate Commerce Commission has authorised the Santa Fe to postpone completion of the Farley-Colmor link until 1944.

#### Increasing Freight Facilities

Extensive freight traffic improvements are being carried out by the Norfolk & Western and the Pennsylvania Railroads. The former is laying out a new westbound freight classification yard at Portsmouth, Ohio, on the main line, 111 miles east of Cincinnati. It is a hump yard with 18 tracks, 1,000 to 2,000 ft. long, and will have wagon retarders and modern signalling appliances for controlling operation in the classification and receiving yards; the total cost will be \$6,000,000. The Pennsylvania is increasing by 25 per cent. its track facilities for coal storage in the South Amboy area, on the southern outskirts of New York, and is laying down 21 new tracks, to hold 357 wagons, at or adjacent to South Amboy, and another 13 tracks, with a capacity of 639 wagons, at Runyon, New Jersey, 6 miles further south.

### CHILE

#### Air Services

On November 22 the Linea Aérea Nacional, which hitherto had operated only between Santiago and points to the north as far as Arica, inaugurated a new air service to the south between Santiago and Concepcion. Regular flights are made with modern Lockheed planes, having capacity for 12 passengers, between the two cities on Tuesday, Thursday, and Saturday, leaving Los Cerrillos, the Santiago airport, at 9 a.m. and returning at 6 p.m. the same day. The schedule calls for approximately 1 hr. 40 min. of flying time for the distance of more than 400 km. (say, 250 miles).

On November 25, Panagra (Pan American Grace Airways) further increased its services between Santiago and Buenos Aires with stops at Mendoza and Cordoba, and now maintains daily flights on this route.

#### Large Volume of Air Traffic

Statistics showing the traffic handled by the Chilean Air Line (Linea Aérea Nacional) for the first 10 months of 1941 record a notable increase in comparison with the two preceding years. The number of passengers carried and the passenger-kilometres were more than double the total for the entire year 1940, while hours of flight and kilometres flown were notably greater. The only decrease was in the quantity of official mail handled.

The 1939 and 1940 traffic of the Chilean Air Line made a poor showing in comparison with 1938; most of the various items had registered a decline, and even the number of kilometres was smaller in 1940 than in 1938—consequently, the expansion that has been taking place in 1941 represents a marked reversal of the previous trend.

### SWEDEN

#### State Railways and Budget

The allowances asked for in the Budget for 1942-43 for investment in the State Railways amount to Kr. 65,885,000, against slightly more than Kr. 59,000,000 in the

current Budget. Fairly large amounts, totalling Kr. 10,000,000, are sought for the continued construction of a second track on important lines. Electrification will be continued on the Helsingborg-Hässleholm, Esloef-Helsingborg, Sundsvall-Ånge, and the Gävle-Ockelbo sections. According to the original plan for this electrification, the necessary cost was to be met in two financial years; the total was Kr. 34,000,000, of which Kr. 15,000,000 was granted by the Riksdag of 1941. The Government proposal is to complete the two last-mentioned lines during the coming financial year, whereas works on the other two lines, not so far advanced, could be completed in the latter half of 1943. In this way the fairly satisfactory copper reserves of the State Railways could be maintained longer as a general reserve against unforeseen requirements. Big allowances are sought for the purchase of engines and rolling stock and particularly for the continued organisation of emergency measures on the railways, massing of stored materials for repair work, organisation of repair commands, storing of steam engines as reserve, and so forth.

### SPAIN

#### State Railways Organisation

The definite organisation of the R.E.N.F.E. (Red Nacional de los Ferrocarriles Españoles), which comprises all the broad-gauge railways taken over by the State under the Nationalisation Law of January 24, 1941, is outlined in a recent issue of the Madrid Journal *Ferrocarriles y Tranvías*. Before the railways were taken over, on February 1, 1941, the Government had already intervened and had appointed administrative staff to replace the boards of directors of the companies. It was then decided to continue the operation of the systems of the principal companies as three zones, to be known as the Northern, M.Z.A., and Western-Andaluses Zones, and this demarcation is still in force, until it can be superseded by the definite organisation. The period of six months allowed for the companies to hand over their properties expired on July 31, 1941, and on November 15 the plan was announced for the operation of the whole system. As provided for by the Law, there is a council of administration on which the Ministry of Public Works and other Ministries are represented. The General Manager is also a member of the council, and there is a working committee of four, to relieve the council of detail. The general secretariat depends directly on the council. The General Manager is assisted by two Deputy General Managers, and also by a legal adviser and at least two technical assistants.

The departmental system of operation has been chosen (as more suited than the divisional to local conditions), and the services are distributed in six departments. Instead, however, of the usual titles, these departments will each be in charge of an Assistant General Manager. Sub-departments will be formed where it is desirable to co-ordinate services, such as those of traffic and locomotive running. A semi-official meeting took place in Madrid on November 15, when the newly appointed Assistant Managers and other officials were invited to meet the President of the Council Señor Perez Conesa, and the General Manager, Señor Marquina. The total length of the nationalised broad-gauge railways making up the State system is 7,842 miles. The Law of January 24, 1941, was fully described in THE RAILWAY GAZETTE of March 28, 1941, at page 360.

## THE NEED OF AN INDO-BURMA RAILWAY

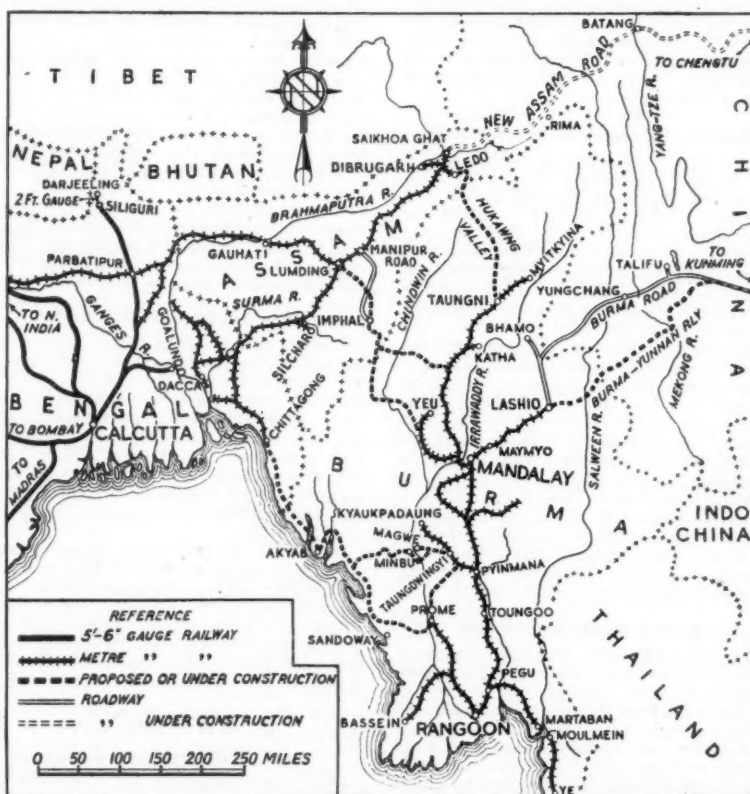
*A correspondent, who has played some part in furthering the project, discusses the possible routes*

WITH Burma already hard pressed and menaced by a complete invasion by land and sea, there must be deep regret in many minds that a short-sighted policy during the past half century in both India and London refrained from constructing the long-contemplated Indo-Burma Railway. This may sound like wisdom after the event, but actually the present writer assisted in a humble capacity, both in word and deed, in furthering the project over a quarter of a century ago. The Empire had its warning in 1914 when the German cruiser *Emden* was at large in the Bay of Bengal and shelled Madras without opposition. It is true that such a railway would be very costly to build, that its prime and recurring costs could not be justified commercially, and that in point of tariffs, time, and comfort it could not compete in the carriage of mails, passengers, or goods with the long-established sea or more recent air communications between Calcutta and Rangoon. These arguments were considered sufficient to outweigh strategic, developmental, and administrative considerations as then foreseen.

It must not be thought, however, that there was any laxity of endeavour on the railway side to scour the intervening belt of country varying in width and some 600 miles long from the Hukawng Valley in the north almost to the extreme south-western tip of Burma, for any and every feasible alignment for a railway. In point of fact, four main routes were investigated at different times, three of them in great detail, and numerous alignments were surveyed. In every instance the main obstacle to be overcome was the great Pennine Ridge of Burma, the Arakan Yomas, and the Chin, Patkoi, and other tumbled masses of mountains in extension of the Yomas northwards. Due to its topography, most of the intervening country is almost uninhabited and, in the extreme north, barely administered. The four main routes surveyed from north to south were: (1) the Hukawng Valley route, from Ledo, the eastern terminus of the Dibru-Sadiya Railway, near the northern end of the Bengal & Assam Railway in Upper Assam, over the Patkoi Range and through the Hukawng Valley to a point near Taungni, the third station short of Myitkyina, the northern terminus of the Burma Railways; (2) the Manipur route, from Lumding on the Bengal & Assam Railway across the Chin and other hills to the centre of the Mandalay-Myitkyina section of the Burma Railways; (3) the An Pass route from Chittagong, on the Bengal & Assam Railway, down the coast to a point east of Akyab, and thence over the An Pass in the Yomas to Minbu and Magwe on the Irrawaddy, and onwards to Taungdwingyi on the Pyinmana-Kyaukpadaung branch of the Burma Railways; and (4) the same alignment as (3) to near Akyab, but continuing down the Arakan coast to the Sandoway district, and from there over the Yomas to Prome, a terminus of the Burma Railways.

It may be noted that, whereas routes (3) and (4) would carry a small volume of local traffic, they are both vulnerable from the sea. Prome, too, has rail connection only with Rangoon and southern Burma, whereas the An Pass route (3) joins the Rangoon-Mandalay main line at Pyin-

mana in central Burma, providing communication with Upper Burma also. On the other hand, routes (1) and (2), though destitute of any local traffic prospects worthy of consideration, would provide comparatively safe lines of communication from northern and central India by rail via Parbatipur, Gauhati, and Lumding to the Irrawaddy at Katha, by river thence to Bhamo, and onwards by the Burma Road to China, as well as a secure means for the reinforcement of Burma, well back from the threatened Bay of Bengal. Now, however, in the absence of any Indo-Burma railway, and seeing that the port of Rangoon has been closed to such traffic, there would seem to be no route immediately available by which supplies can reach the Chinese, until the new road is completed from Upper Assam north-eastwards through Rima and Batang to Chengtu and Chungking. This road will, unfortunately, be useless for the defence of Burma, which without command of the sea, can be reinforced, in so far as supplies are concerned, only by a railway or road from India. So difficult is the intervening country, that this could hardly be built in less than a couple of years unless it is found possible to develop hurriedly existing fair-weather tracks between Manipur and the Mandalay-Myitkyina railway. Imphal, Manipur, is already connected by a good metalled road with Manipur Road, the second station north of Lumding on the Bengal & Assam Railway. Eastwards of Imphal, however, there is very difficult country over the Chin hills, across the Chindwin valley and more mountains to reach the



Sketch map of the transport links between India, Burma and China



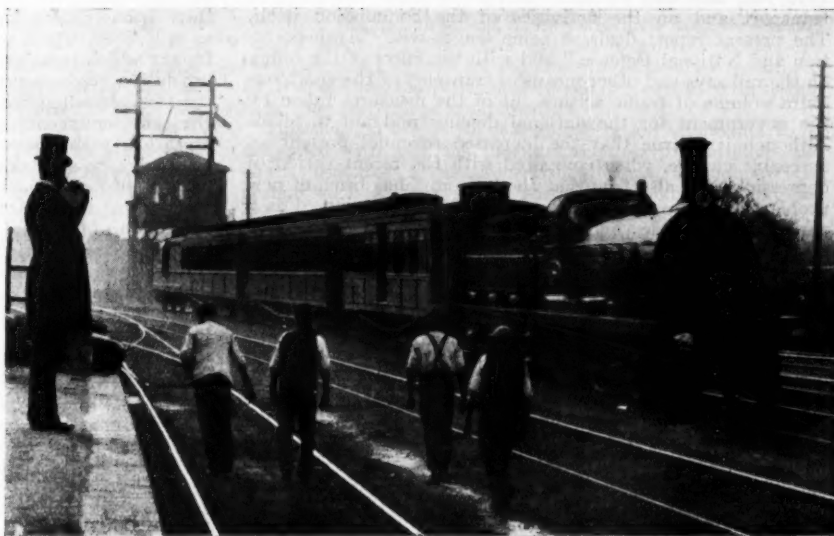
Burma Railways, through which, so far as is known, only tracks exist. It is possible that these are already being converted into roads passable for motor vehicles by Chinese methods and even, perhaps, by labour imported from Yunnan (China); there is certainly none available locally in such quantity as would be required. If a temporary route can thus be opened, it will allow of supplies from India to go by rail to Manipur Road, thence by road and track to a station on the Mandalay—Myitkyina line,

by rail thence to Katha, by steamer up the Irrawaddy to Bhamo, and so to the Burma Road.

On the other hand, it may be found more feasible to develop tracks similarly along the Hukawng Valley route, using rail from Mogung or Taungni to Katha and onwards by river and road as just described. At the moment there is nothing to indicate what preliminary measures are being taken to tide over the period until the road *via* Rima and Batang is completed.

## OLD SIGNALS AT TONBRIDGE, SOUTH EASTERN RAILWAY

THE view we produce alongside shows the Continental Club Train running through Tonbridge in 1893. The locomotives used were the South Eastern Railway standard 7 ft. Class "F" 4-4-0s of James Stirling's design. The signals seen on the old Tonbridge Junction signal box are illustrative of a practice long in vogue of grouping signals together in one place remote from the actual "fouling points," that is, the points where they had to be obeyed if at danger. The post on the right refers to the movements to and from the direct Sevenoaks route, that on the left to the older Redhill route. A down train from Sevenoaks could run to either of two lines; hence there are two semaphores for trains from that route, one of which is lowered for the Club Train. Up trains could start from either of three roads to either route, hence each post carries three up semaphores. The usual practice was for the top arm to apply to the most left hand line (converging or diverging) but occasionally this principle was violated and the two arms on one level would be made to read to and from the same road, especially at termini. This system, although convenient mechanically, as all the signals were worked by short direct rod connections, was difficult to interpret from the footplate. Moreover, it was most inconvenient in practical working, as fog made direct observation of the signals from the fouling points impossible. In any case drivers had to be relied on to stop at the correct place if signals were against them. The Midland Railway is believed to have been the first to break



Photo]

[T. F. Budden

The Continental Club Train running through Tonbridge in 1893

away from this "group" system of signalling and to use the present practice of individual signals at the fouling points. The Sevenoaks—Tonbridge direct line was opened throughout in May, 1868, and the signalling provided by the then well-known firm of Stevens & Sons, the Chief Engineer of which, Mr. W. F. Burleigh, is still living at a very advanced age. He well remembers the fitting up of the signal box in the picture, and has some amusing pen and ink drawings made during the equipping of the line. The Club Train is seen carrying the white diamond "via Sevenoaks" headboard; trains on the old Redhill route carried no head signal.

## More Swiss Electrification

IN the second wartime budget of the Swiss Federal Railways the electrification of the Zurich—Oerlikon—Wettingen and the Auvier—Verrières sections, already well advanced, is to be completed. Electrification of the Winterthur—Neuhausen line is also to be undertaken. The Winterthur—Neuhausen section is part of the only route from Zurich to Schaffhausen which is entirely in Swiss territory, the electrified main line *via* Bulach—Eglisau running through Germany for a short distance, and being, therefore, subject to restrictions and interruptions. Two heavy or four to five light electric locomotives are to be built under the new budget. The total number of electric locomotives, excluding the Brünig line, by the end of 1942, should include 516 electric locomotives, 3 diesel locomotives, 64 motor-coaches and railcars, and 161 light tractors.

At the opening of an electrified section of railway in the Canton of Zurich on February 14, M. Celio, Federal Councillor and Minister of Posts & Railways, pointed out that one aspect of the hydro-electric question in Switzerland was the gradual and effective development of the production of

electricity in the future. From 1914 to 1939, he said, the production of electricity increased nearly fourfold, and consumption more than threefold. In the last 25 years about fr. 2,000,000,000 had been spent on building power stations, laying cables, and erecting distribution plant in Switzerland, a yearly average of fr. 80,000,000, while the value of electric power consumed rose from about fr. 65,000,000 a year to fr. 280,000,000. A 10-year plan, to cost fr. 650,000,000 had been prepared by the Swiss Electro-Technical Union and the Union of Swiss Electric Power Stations. This very important programme was at present being examined by the competent departments and would be placed before the General Federal Council in the near future. It provided for the gradual erection of big power stations, principally stations that would be able to supply a very large amount of cheap current. The examination and execution of the plan, making full use of the water power in Switzerland, must proceed rapidly so that Switzerland might be equipped at any time primarily to supply her own needs, but also to co-operate in the reconstruction of Europe after the war. On the day before M. Celio's speech it was announced that, because of shortage of electric power, all Swiss sports trains were to be cancelled.

## THE RAILWAYS OF THE U.S.A.

### *Interstate Commerce Commission's report on transport in the United States during the year to October 31, 1941*

THE 55th annual report of the Interstate Commerce Commission, submitted to Congress on January 7, reviews the business of all classes of transport in the United States during the period November 1, 1940, to October 31, 1941. In the previous report (see THE RAILWAY GAZETTE of May 30, 1941), the Commission dealt with the Transportation Act, 1940, and described the effect of this legislative measure on transport and on the activities of the commission itself. The present report deals at some length with "Transportation and National Defense," and with the effect of the influx on the railways and other means of transport of the enormous extra volume of traffic arising out of the measures taken by the government for the national defence and aid to allies. Although it is true that the increased revenues present an agreeable change, when compared with the recent period of depression, it is also true that the "boom" has brought new problems. Moreover, the business cannot be considered as a permanent increase, and "traffic thus created is not the stuff out of which future railroad prosperity is likely to be built." The commission hopes the country will avoid a disastrous aftermath, but there is no certainty of this, or that the railroads may not later be faced with some even more formidable form of competition. With these considerations the commission has noted with approval that many managements are using the increased revenues to reduce fixed charges, and to consolidate the financial position of their companies.

The commission refers to the fears that had been expressed that shortage of rolling stock would lead to congestion in the handling of defence traffic, but such fears have so far proved unfounded. There has so far been no serious difficulty of this sort, thanks, in the first place, to improvements in operating efficiency, and, secondly, to the experience gained during the war of 1914-19. The commission also refers, in this connection, to the Car Service Division, the Shippers' Advisory Boards, and the commission's emergency powers. There has been no occasion, fortunately, to use such powers, but they are there, to be used and promptly used. Meanwhile, the Bureau of Service has 40 agents in the field, as compared with 16 at the beginning of the emergency. The commission goes on to discuss the supply of materials for equipment, and the importance of allocating to transportation the quota necessary, not only for emergency requirements, but for all services. If the railways are not to be allocated materials necessary to maintain a service meeting all demands, then the commission would prefer that any necessary restrictions should be imposed on the production of commodities, rather than on their movement after they are produced. Not only the railways, but all classes of carriers, are giving essential wartime service, and the cargo steamers on the Great Lakes are quoted as performing with much efficiency a service of enormous importance. Road transport has increased at an even greater rate than the business and revenues of the railways, and motor carriers of passengers are playing a very important part in the movement of troops and of the civilian population engaged in the defence industries.

The statistical section of the report shows that aggregate revenues of all carriers reporting to the commission for the year ended June 30, 1941, amounted to \$6,669,716,000, an increase of 9.7 per cent. over the calendar year 1940, and 18.6 per cent. over 1939. There was an increase of 13.5 per cent. in the total ton-miles in 1940, over 1939; the air carriers and carriers on inland waterways, including the Great Lakes, showed the greatest percentage gains. For the 12 months ended August 31, 1941, the operating ratio of the Class I railways was 67.9 per cent. lower than that of any calendar year since 1916, when it was 65.5 per cent.

The commission refers to the Board of Investigation & Research created by the Transportation Act of 1940, with which the members of the commission are co-operating and collaborating in matters of great public importance. There is also a reference to rules of procedure, drafted by the

Attorney-General's Committee on Administrative Procedure. Under the heading of "Delegation of Authority," the commission says this is an obvious necessity, if the danger is to be avoided of the members becoming buried in an avalanche of detail, and if they are to have time for the study and constructive thought which ought to be given to major issues. Among the legislative recommendations made in the report, there is one calling for the enactment of the measure known as H.R. 5598, which would define specifically the government freight which remains eligible for land-grant rates. Another legislative recommendation repeats the suggestion made in the two preceding reports, that the commission should have the same emergency powers with respect to motor carriers as it has with respect to railways, and also authority, on complaint, to set aside State regulations governing sizes and weights of motor vehicles. The commission also asks for an amendment to the Act, giving it additional power to delegate its work to individual commissioners or boards of employees. The report refers briefly to the beginning of the regulation of waterway carriers provided for in Title II of the Act. Petroleum and its products, and the struggle for the corresponding traffic, are the subject of a discussion, in which transport by pipe line is described, and the competition arising out of the increasing number of producer-owned tank wagons. Standard time is referred to, with a description of the difficulties arising out of the overlapping of the jurisdiction of federal and State authorities.

The report contains the usual appendices and a full list of cases submitted to the commission and disposed of or pending, with, also, the reports of the commission's various bureaus. Some recent statistics of mileage, rolling stock, etc., of the railways of the U.S.A. were given in THE RAILWAY GAZETTE of February 13 last.

### American Railway Earnings

Some interesting figures relating to the earnings of American railways during 1940 have recently been made public by the Bureau of Statistics of the Interstate Commerce Commission. There are still 735 separate railways in the U.S.A., divided according to their earnings into Class I, Class II, and Class III roads, and the comparison of the financial results achieved is expressed as a percentage of return on their rateable value. On this valuation basis, 94 lines earned more than 10 per cent.; roughly half of these were controlled by industrial corporations and the remainder were independent. In the latter category the two largest and best-known companies in Class I are the Virginian, of which the net earnings reached 11.1 per cent., and the Chesapeake & Ohio, with 10.4 per cent.; both of these lines are largely occupied with the carriage of coal, the Virginian almost exclusively so. Among controlled concerns in Class I the Duluth, Missabe & Iron Range, an ore-carrying line in Minnesota controlled by the United States Steel Corporation, earned 18.1 per cent., and the Cambria & Indiana, with 17.9 per cent. Of the 526 "line-haul" or through routes the average earnings in Class I were 3.76 per cent., in Class II 2.87 per cent., and in Class III 1.82 per cent., whereas of the 209 switching and terminal companies the average was 6.82 per cent. in Class I, 6.07 per cent. in Class II, and 3.08 per cent. in Class III. Altogether 237 lines operated with a return of less than 1 per cent., and of these 24 were in Class I; 16 of them showed a deficit; only 32 of the 131 Class I "line-haul" concerns were listed as having returns of over 5.75 per cent. The record for prosperity was held by a small Class III line known as the Cape Fear, which, on its valuation of \$27,100 earned \$23,845, a percentage of 88.0; another Class III line owned by the city of Lakeland, Georgia, earned 29.9 per cent.



# ELECTRIC TRACTION SECTION

## Substation Control on the Paris-Le Mans Line

*The 13 rectifier substations and 13 track-paralleling huts on this 1,500-volt d.c. system are all remotely controlled*

AT the time the Paris—Le Mans line of the French National Railways was turned over to electric traction in June, 1937, the 13 substations feeding the line were controlled locally, and remained thus until March, 1938, when the remote control apparatus enabling supervision and operation from a central control room at Paris was completed. The introduction of this system made possible a staff reduction of 30.

The h.t. supply and general equipment of the 13 double-storey substations were dealt with in the extensive description of the Paris—Le Mans conversion published in the May 28, 1937, issue of the *Electric Traction Supplement*, but the rectifier controls and supervisory equipment were referred to then only briefly, as the work was not quite complete. The two substations nearest Paris—Ouest-Ceinture and Porchefontaine—take the Paris—Versailles suburban load as well as that of main-line trains, and have three 2,750 kW rectifiers; all the other substations contain two 2,000 kW rectifiers.

Remote control as used in ordinary operation is centred at a control room at the Vaugirard goods station near Montparnasse terminus, but the substations are also fitted with automatic control for functions and operations not requiring judgment by an operator. These control systems not only cover the substations but also the equipment in the sectionalising and track-paralleling huts between each pair of subs.

All the controls for the apparatus in a substation are brought to a switchboard in the form of a metal cabinet located on the upper floor of the building, and on the front of which there is a reproduction of the circuits controlled, carried out in different colours according to the duty of each circuit. Each piece of apparatus so controlled is represented by a disc-operated switch of the turn-and-push type, inserted in the diagram; the disc may be turned to either of two positions at right angles to each other, one of which shows the circuit as an unbroken line and represents the apparatus in the closed position. To change the position of any item of equipment the disc must be turned, then pushed in.

Indication is on the normally-dark principle. Each disc switch is provided with a lamp which shows no light when the position of the switch corresponds to that of the apparatus; if any piece of apparatus operates automatically, the lamp lights up and a bell rings, and the disc must be turned in order to restore previous conditions. A special switch enables all lamps to be lit at once and causes the bell to sound to ascertain that all is in order.

Since the substations are normally remote-controlled from Paris, the special switch mentioned above also enables the lamps and bell to be cut out, so as to prevent each operation effected from the control room, or automatically through the local control, from lighting the corresponding lamps and actuating the bell.

The switchboard is also provided with all the metering equipment necessary for the operation of the substation. The recording instruments are controlled by a master-clock which ensures that all charts are kept running in synchronism. Finally, an operation-recorder, likewise controlled by the master-clock, registers the exact time at which any piece of apparatus in the substation changes position, and simultaneously notes all those items of equipment which are in the closed position. By comparing consecutive lines drawn by this recorder, a very accurate idea of what has happened in the substation may be obtained.

All substations are provided with two kinds of equipment,

viz. an automatic control which carries out operations not requiring judgment, and a remote control enabling operations which do require judgment to be performed from the central control point in Paris. The substation control-operator can thus carry out at will all switching movements necessitated by traffic conditions, and he receives immediate confirmation that they have been completed.

This method of control enables substation attendants to be dispensed with and has the advantage of presenting to the control-operator a picture of conditions throughout the system such as individual substation attendants could not obtain. This picture of the whole system is made still more complete by direct connections with other departments concerned, e.g. traffic controllers, track gangs and power suppliers, which enables rapid and unified action to be taken.

It is evident that automatic control alone will not suffice for the operation of a substation; but it may be asked why centralised control, which so advantageously replaces manual control in all operations falling outside the sphere of automatic working, could not also perform those included in the latter, and by this means take over complete control of the substation, in which case the automatic equipment could be eliminated. This could be done, but it was considered preferable to retain automatic control for operations which could be performed more rapidly and reliably by this method, while enabling the remote-control operator to direct certain of these operations if necessary. At the same time, in case of a breakdown at a substation, it is an advantage to be able to leave it to operate automatically by itself pending the arrival of one of the staff.

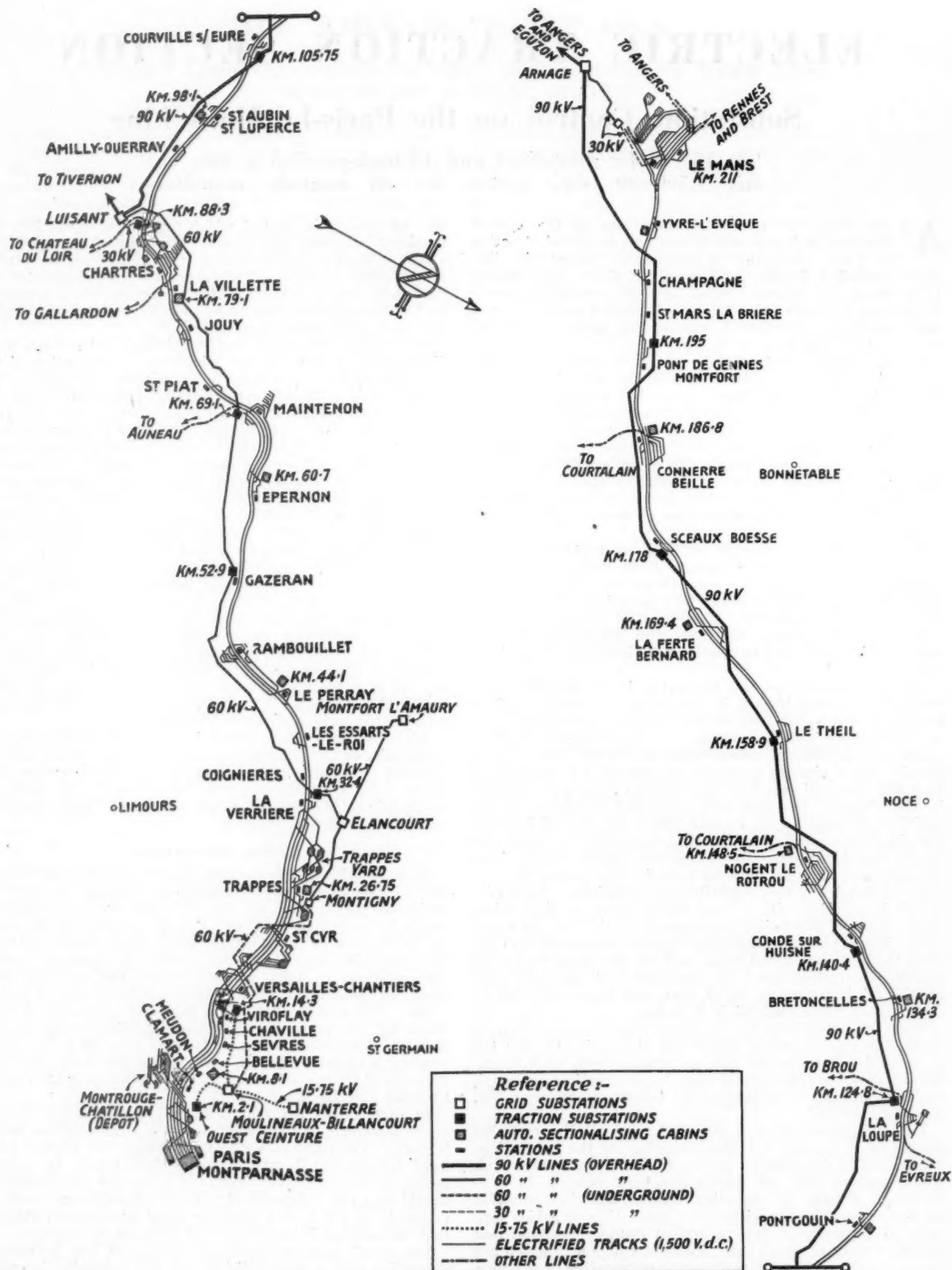
All substations are provided with the standard system of automatic, or rather semi-automatic, working, which aims at ensuring continuity of supply to the overhead system, and at the same time effecting a saving of current by arranging for certain substations to be switched in only when operating conditions render it necessary.

### Pilot Substations

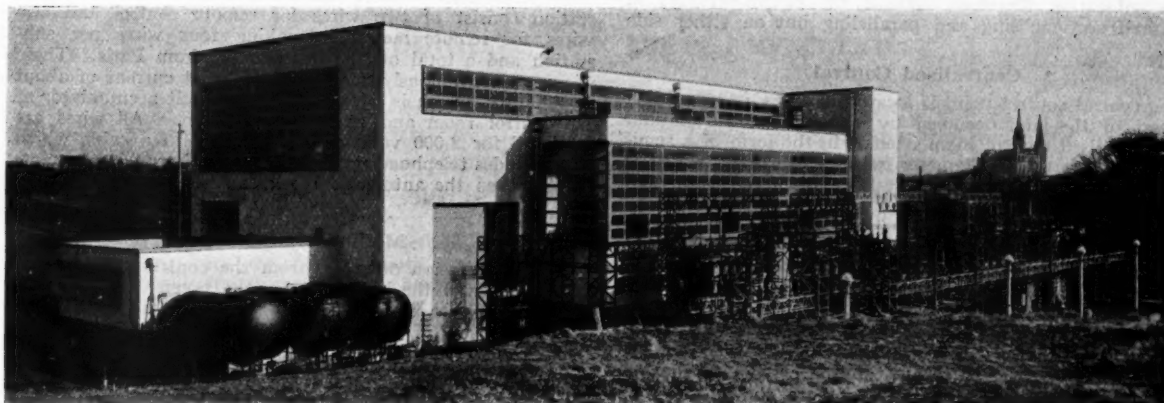
To reduce losses due to light running, certain substations, termed pilots, are kept continuously running in order to maintain the voltage on the overhead system, which is normally connected from one end of the line to the other by the busbars in the substations and track-paralleling huts. The remaining substations are started up when the busbar voltage drops to 1,500 which indicates the approach of a train, and shut down when their output falls below a certain value. This cutting in and out can also be effected at fixed times by means of a master-clock provided with contact fingers. Any substation may be used as a pilot by merely starting it up on remote or local control, but some pilots are determined by the volume of station traffic, as is the case at Chartres and Le Mans.

In each substation the rectifiers are started up or shut down according to the demands of the section of line which it feeds. The order in which the rectifiers are started up is fixed beforehand; it may be changed, but only by adjustments at the substation itself. If a rectifier circuit-breaker should trip out automatically, three attempts are made to reclose it, and it is only after the third unsuccessful attempt that the rectifier is locked out and replaced by another.

The circuit-breakers feeding a section of line between a substation and a sectionalising hut are normally interconnected, but may act independently if necessary. Under normal conditions, after these circuit-breakers have tripped out, the reclosing movement is only carried out after the



Map of Paris-Le Mans line, showing electrified tracks, transmission lines, substations, and track-parallel huts

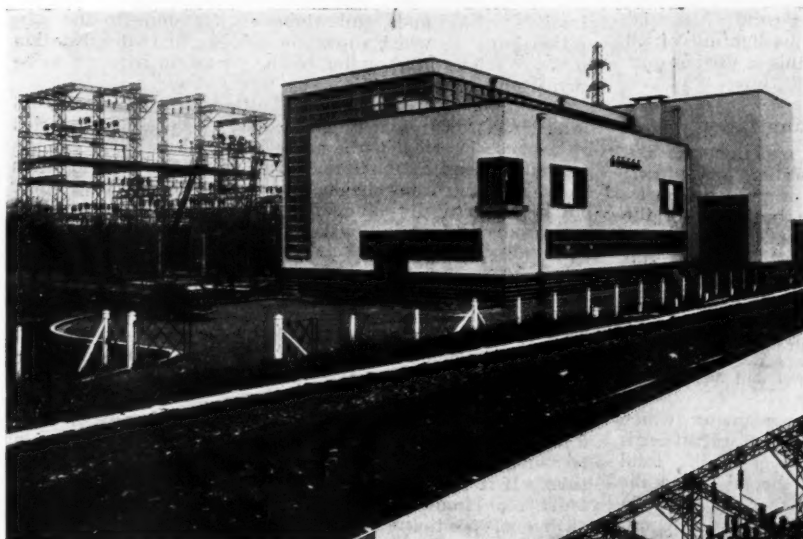


*Chartres substation on the Paris-Le Mans line*

insulation of the contact line has been tested and found satisfactory. This test is effected from the substation by living up the contact line through a resistance and comparing the voltage across it with that of the system. This test is carried out three times, and it is only after the third negative result that the circuit-breakers are locked out. It

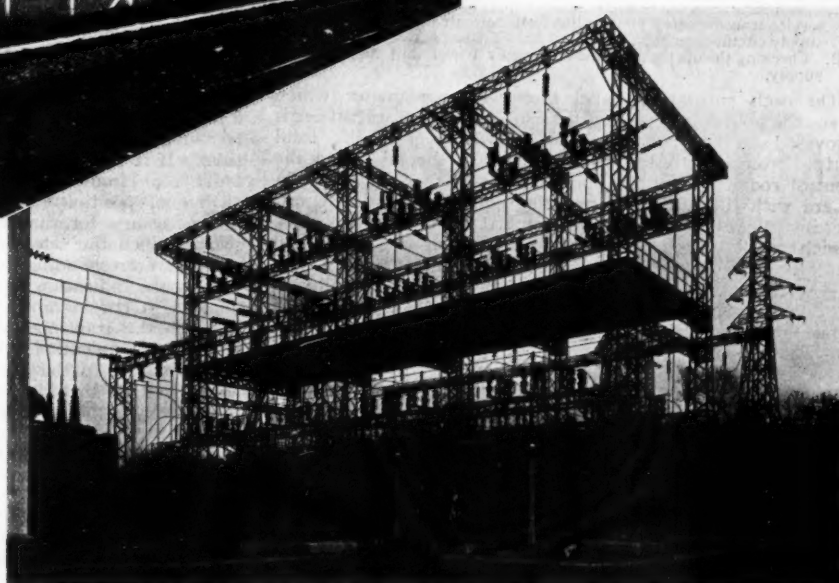
is possible, however, to unlock them remotely and to cause the equipment to carry out a fresh test.

The automatic control of the sectionalising hut breakers from the adjacent substation is effected over three wires for each breaker, at a voltage of 60: one wire for synchronised operation with the corresponding substation breaker, another



*Left: One of the concrete substations supplying 1,500 volts d.c. to the Paris-Le Mans electrified line*

*Right: Incoming high-tension feeders and framework, with insulators and outdoor switch-gear, behind one of the substations*





for independent control, and the third for common return. Each substation therefore controls the circuit-breakers in each half sectionalising and paralleling hut on either side of it.

### Centralised Control

The central control point is located in Paris, in a building on part of the land occupied by Vaugirard goods station. The centralised control room itself is in the form of a semi-circle of 42 ft. 8 in. diameter, at the centre of which is located the control-operator's desk. This room is lighted during the day by a translucent ceiling, and at night by indirect lighting which eliminates all glare. The control board is installed on the semi-circular wall of the room, and above it is located a diagram depicting the line from Paris to Le Mans. This board reproduces in miniature all the high-tension circuits, 1,500-volt traction and 3,000-volt signalling supplies, and the low-tension auxiliary services for substations and line-sectioning huts. It comprises 27 panels, each of which is assigned to a substation or to a sectionalising or paralleling hut. The circuits are shown coloured according to their function.

The control board is of the normally-dark type, as in the substations. It is arranged to report all automatic changes in position of equipment and to afford remote control of the equipments combined with confirmatory indication of the moves made. When an item of equipment changes position in a substation or paralleling hut, the lamp on the switch representing it on the control board lights up and a bell rings; to extinguish the lamp and stop the bell it is necessary to operate the switch to the position corresponding to that of the equipment concerned. Certain lamps used for fault reporting remain alight for the whole time the fault persists. To facilitate location of apparatus which has changed position of itself, each panel is provided with a general-purpose lamp which lights up when any piece of apparatus controlled from that panel operates in this way. A special change-over switch causes the simultaneous lighting of all lamps on a panel and also rings the bell; this is used to test that all is in order.

### Control Movements and Communication

To make a switching movement, the operator sets the change-over switch of the apparatus in question to the position required, and presses a push-button or pulls a handle. The change-over switch lights up at the beginning of the operation and only goes out after confirmation has been received that the operation has been carried out. In this way the operator at Paris can control the following movements in each substation:—

1. Switching in or out of high-tension supply; rectifier sets; auxiliary service transformers; contact line feeder circuit-breakers; signalling supply circuit-breakers.
2. Checking the operation of the emergency power unit for signalling supply.

On each substation panel there is a wattmeter which gives the power output from that substation. A wattmeter is provided on the controller's desk, which gives the total output from all substations together. In the middle of the control room, behind the operator's desk, there is a switch-board with the substation metering equipment and integrating instruments recording the output at five-minute intervals, which enables the average output for each substation and for all substations together to be obtained.

The substation controller is linked by telephone to all substations, stations and depots; and also to the traffic controllers at Paris and Le Mans, the supervisor of the 60,000-volt Paris regional underground network, and the power grid switching stations at Luisant and Arnage. He is also connected to telephone boxes placed at 500-m. (1,640 ft.) intervals along the track, which enable him to communicate with the track maintenance gangs. All telephone lines between the points mentioned above, as well as all track-side telephone lines, are carried in cables located in the troughing which houses the signalling supply cables.

The remote-control and remote-metering equipment for each substation, and the two half sectionalising huts controlled from it, are housed in cabinets arranged in a circular gallery behind the control board. At each substation there

are similar cabinets containing the same type of apparatus. The connections between the control room and each substation consist of two wires for remote control and two wires for remote metering, making four wires per substation and a total of 52 wires starting from Paris. These wires are continuously energised by a pilot current of about 2 milliamps, which is derived from a 60-volt accumulator at the control room and at each substation. All wires are insulated for 2,000 volts and are carried in a cable which also includes telephone circuits; this cable is run in the same troughing as the automatic block cables.

### Method of Control

The transmission of orders from the control room to the substations and the indications in the reverse direction are carried out by a series of impulses impressed on the pilot current flowing in the supervisory wires. Impulses from the control room are in the form of cancellations of the pilot current, and those from the substations reverse it. The principle of operation is that for each substation panel on the main control board there is a selector connected to the push-button control-lever and signalling lamp circuits on the board. There is a similar selector in each substation connected to the control circuits of the items of equipment it is desired to operate.

When any piece of apparatus in a substation changes position of its own accord, the selector in that substation starts to search for the item concerned, and in doing so transmits a series of impulses grouped in a distinctive manner along the pilot wires to the control room. These impulses operate the control room selector step-by-step until they reach the contact which closes the circuit to the corresponding signalling lamp.

When an order is sent out from the control room, the selector of the panel concerned starts to search for the circuit energised and, while doing so, transmits to the substation impulses which direct the selector in that substation to the contact corresponding to the operation required to be carried out.

The number of impulses transmitted is the same for all orders; each order is distinguished by the position occupied by a pause inserted in the series of impulses. This process necessitates one complete revolution of the selector for each order, and the transmission of only one order at a time, but it automatically eliminates sources of error which might be introduced by additional impulses or by the omission of an impulse.

For return-indication the procedure is slightly modified so that when several items of equipment in a substation change position simultaneously, the corresponding indications may be transmitted in one revolution of the selector. The number of impulses always remains the same, but the distinctive pauses for each indication are inserted at the same time in the series.

Apart from the control of the number of impulses, therefore, correct operation depends on the transmitting and receiving selectors completing their rotation at the same time. If it is a question of confirming the execution of an order sent from Paris, instead of reporting an automatic change of position of any apparatus in a substation, it is not necessary for the selector gear to start up on a new search, since the selectors remain for a certain time in the position corresponding to the execution of the order, and the return indication finds the route set up for it, which achieves a considerable saving of time. The lapse of time between the transmission of an order and the reception of the return indications varies from 10 to 20 sec., according to the nature of the order.

The remote metering of the output of each substation is effected by a meter which sends out impulses to the control room at a frequency proportional to the output. These impulses are received at the control room, first by apparatus connected to the wattmeter on the substation panel which is so arranged that the deflection of the needle is proportional to the frequency of the impulses; and, secondly, by a meter which runs at a speed proportional to the frequency and operates the integrating meter of the substation concerned.

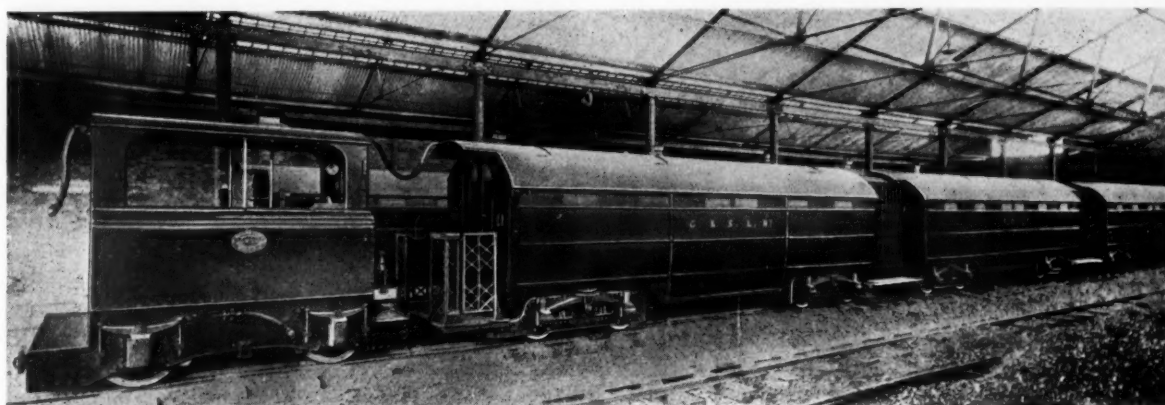
## Locomotives of the C. & S.L.R.

*The City & South London Railway, opened over half a century ago, was worked for 32 years by locomotives. Their general design remained practically the same throughout the period, but improvements in details resulted in the development of a very efficient type for the conditions obtaining*

WHEN Mather & Platt Limited undertook, in January, 1889, to work the City & South London Railway electrically, the Board of Trade insisted on a separate locomotive, and, in view of the paucity of knowledge about the fire risks of electric traction, its action was fully justified. In after years, after fires on other lines, the C. & S.L.R. Company pointed out in its advertisements that its locomotive work ng gave much greater safety. In any event, it would

noise. The gearless system was also used on the Waterloo & City Railway, down to 1940, on the original Liverpool Overhead trains, and on the locomotives used on the Central London Railway from 1900 to 1903.

For the opening of the C. & S.L.R. line in December, 1890, Mather & Platt provided, on the experience gained, 14 locomotives inclusive, and the final design is seen in our second illustration. Their dimensions were 14 ft. overall, 6 ft. wheel-

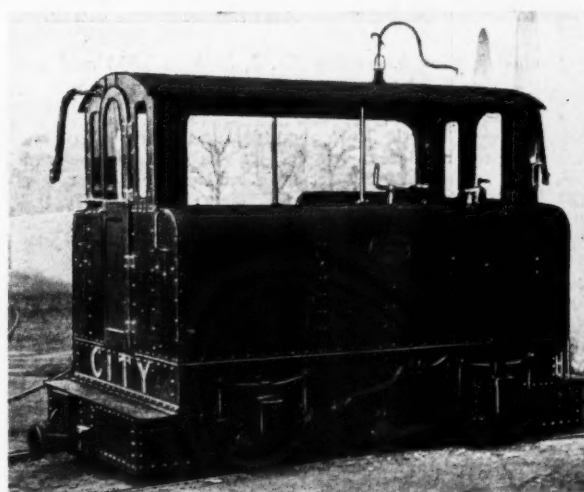


*No. 1 locomotive of the C. & S.L.R. as first constructed, together with carriages of the first delivery. The photograph was taken at Stockwell depot about the time the line was opened*

have been extremely difficult at the time to get any motor then known on a coach running in the very small tunnel adopted, namely, 10 ft. 2 in. dia. between the City and Elephant & Castle, and only 4 in. larger elsewhere. To obtain certain essential data, a locomotive and two carriages were delivered in October, 1889, and run between the City and the Elephant, where there was a crossover, from power supplied by a temporary engine and generator at the Borough Station, and Greathead was able to report in January, 1890 that "the satisfactory working of the line by electricity has been placed beyond doubt by the important series of experiments carried out by Mather & Platt on the City section." This testimony gained additional force from the fact that he had been a strong advocate of cable traction and was friendly with those who developed it.

The first experimental locomotive is seen in our first illustration. The inscription "No. 1" is clearly visible on the original photograph. It consisted of a cab, similar to those then used with steam tram engines, with end doors and windows, open above the side sheets, which curved out and down, with a four-wheeled frame. Each axle carried the armature—Gramme wound—of a direct-current motor, thus dispensing with gearing. The field magnets were inclined diagonally to each other above the cab floor and boxed in, leaving little space for the two men. The motors were permanently connected in series and controlled by a plain 26-step resistance switch and reversing switch. The equipment was thus extremely simple. Air for the brakes was provided by reservoirs under the cab sides, charged from a hose connection at a terminus on each journey. In February, 1890, a similar locomotive, but having geared motors, was tried but never used for regular service as it made an intolerable

base, 2 ft. 3 in. dia. wheels, height above rail 8 ft. 5½ in., weight 10½ tons. Comparison of the two illustrations shows that the cab has been lengthened—probably to give the men more room and comfort—and the front running plate and



*No. 4, one of the electric locomotives built by Mather & Platt Limited, Manchester, for the opening of the line in 1890*

brake hose pipe correspondingly shortened. The firm of Mather & Platt Limited has some record of having made 16 locomotives in all and as all numbers from 15 can be allocated with certainty to other makers, the conclusion is that Nos. 1 and 2—the experimental engines—were duplicated. This receives support from the fact that the locomotive in the Science Museum, preserved as No. 1 and bearing that number, is of the type seen in the second illustration and is most certainly not the machine appearing in the first photograph. The fact that No. 2 was too noisy for public service would be an inducement to duplicate that one also.

#### Additional Locomotives

Due to the carriages finally weighing about 75 per cent. more than had been intended, and to the fact that the trains were crowded, the first locomotives were heavily overloaded, especially at the steep approach to the old City station, and some armature breakdowns occurred, necessitating rewinding. In 1891 Siemens Bros. & Co. Ltd. supplied two locomotives,

this change prove practicable, the number of passengers capable of being carried will be considerably augmented." The next half yearly report (January, 1895) said that there had been difficulty in making the new train so that it could negotiate the sharp curves at the City, but it had at length been completed and passed by the Board of Trade; all the rolling stock was to be converted in due course, but this never took place. Our efforts to obtain particulars of this interesting train have proved fruitless, but it is known to have been photographed. In 1895 the City terminus was altered from a single track to two tracks and an island platform, and this cut the free space still further, rendering the new train useless. It is known that the late Mr. P. V. McMahon, who became Engineer in 1895, was strongly in favour of locomotives, saying that a breakdown necessitated only the shunting of the defective locomotive, while with motor-coach trains a complete train had to go out of service, involving expensive underground sidings, which the railway did not possess and otherwise would not need. It had by then been decided to abandon the City station, and better results could be secured



*Mather & Platt locomotive No. 8, built in 1890 and rebuilt at Stockwell in 1907, with a train of the all-steel coaches delivered in the same year in connection with the Euston extension*

Nos. 15 and 16, with drum armatures, and their appearance is seen in the third photograph. The cab sides curved right down, as in all others built later. These engines weighed 13½ tons, were a little more powerful than the first ones, and formed the subject of a communication by Alexander Siemens to the British Association. In 1892 the duplicates of Nos. 1 and 2 seem to have been delivered. No other new locomotives were provided, until 1895 when the railway built one, No. 17, at its Stockwell works; this engine weighed a little more than the original ones, but had Gramme ring armatures. During this time, however, the abandonment of locomotive haulage was considered.

#### Experimental Motor Coach Train

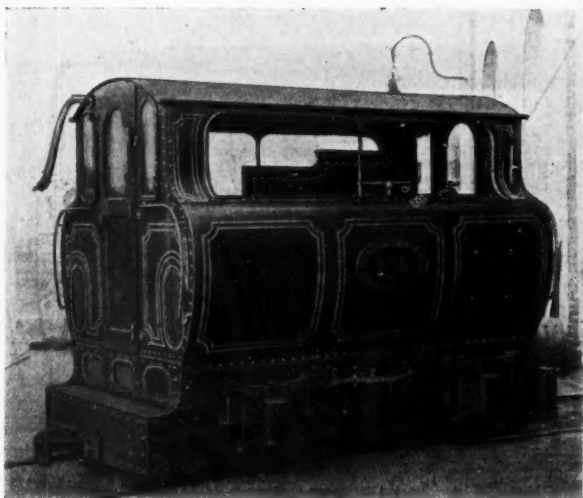
The increasing traffic made it desirable to add a fourth coach to the trains, but there was no room for four coaches at the City terminus unless the separate locomotives could be dispensed with. In their report dated July 18, 1894, the directors said they had "instructed their Engineer to make experiments with a view to substituting motors on the train itself in place of the present separate locomotive. . . Should

by retaining the locomotive and adding a fourth ordinary car directly the Moorgate extension was open.

#### Mr. McMahon's Experiments

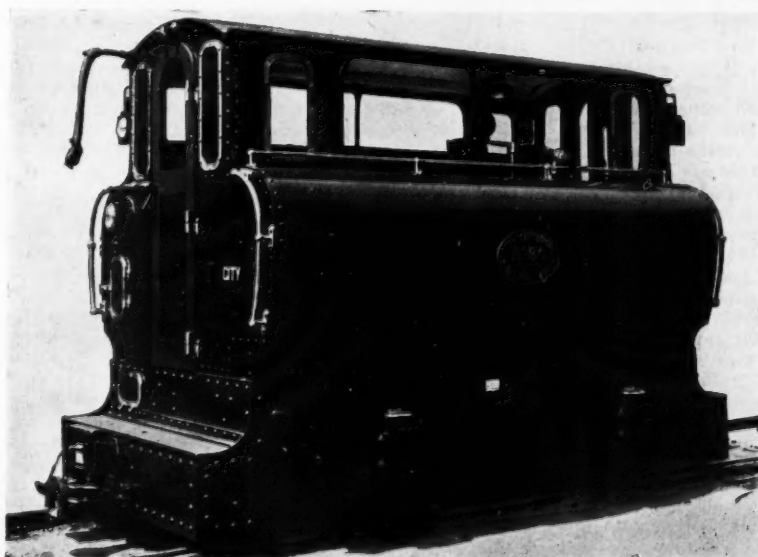
Towards the end of 1896 Mr. McMahon began an exhaustive series of tests with three of the locomotives, No. 12 (Mather & Platt), No. 15 (Siemens), and No. 17 (made at Stockwell). The results, with certain important additional information, were given in a paper to the Institution of Electrical Engineers in May, 1899. In 1897-1898 three more locomotives were delivered: No. 18, seen in the fourth illustration (Crompton & Co. Ltd.); No. 19 (Electric Construction Co. Ltd.); and No. 20 (Thames Ironworks). In the Crompton engine can be seen the enlarged side cab wing plates, with brass beaded windows, designed to reduce draughts, and afterwards always used. At the same time Mr. McMahon converted No. 3 (Mather & Platt) locomotive experimentally to series-parallel working, with a system of field shunting, and on the basis of the successful outcome prepared designs for Nos. 21 and 22, which were built at Stockwell in 1899-1900. A contract for





*Left: No. 16, one of the two locomotives supplied by Siemens Bros. & Co. Ltd. in 1891. The performance of these engines formed the subject of a communication to the British Association*

*Right: No. 18, the first locomotive supplied by Crompton & Co. Ltd. in 1897, in connection with comparative tests, when the general acceleration and improvement of the train service was being investigated*

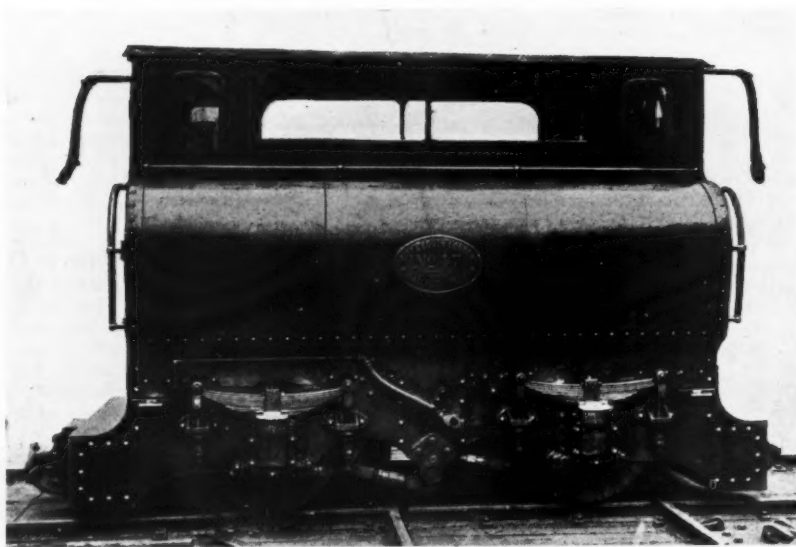


*Left: For nearly two years travellers using Moorgate Station on the Metropolitan Line noticed with interest a brick pedestal in the circulating area upon which was a sheet-covered bulky object. When the sheet was removed it revealed the object to be the old City & South London Railway electric locomotive No. 36, which was built in 1900 by Crompton & Co. Ltd., of Chelmsford. It had been freshly painted in the familiar C. & S.L.R. yellow ochre livery, but has since been damaged in an air raid. Alongside we reproduce a photograph of No. 36, which is one of the two survivors; the other, marked No. 1, is in the Science Museum, South Kensington*

ten others was awarded to Crompton & Co. Ltd., and Nos. 23 to 32 were delivered in 1899, ready for the opening of the Moorgate and Clapham extensions, when all trains were strengthened to four cars.

In this improved design the wheel-base was 5 ft. 6 in., and the overall length 14 ft. 2 in. The motor field magnets lay horizontally and left the cab clear for the men. An electric air compressor was used, but the side hose connection for reservoir filling was retained for emergency. A curious feature was that there was no interlock between reversing and starting switches, Mr. McMahon considering it unnecessary. The wheel diameter was increased to 2 ft. 7 in. giving more clearance above rail level. There were 30 steps on the controller (which had no magnetic blow-out), to facilitate coupling-up and to give comfortable starting. In 1900 Crompton & Co. Ltd., supplied Nos. 33 to 42, of which No. 36, badly damaged by air raid action, is now preserved at Moorgate (Metropolitan Line) Station. In 1901, for the Angel extension, Nos. 43 to 52 were obtained, all substantially to the same designs. These engines proved highly satisfactory; No. 47 appears in the fifth illustration.

With the Euston extension in view, work was begun in 1904 on converting some of the withdrawn Mather & Platt locomotives and in the three following years Nos. 3 to 12 (inclusive) were rebuilt with two Thomson-Houston geared motors developing about 160 h.p. total, and tramcar type controllers; the altered appearance may be seen in the last illustration. These engines ran until the line was closed for rebuilding in 1923. No. 10, marked "Princess of Wales: November 4, 1890"—the engine used at the formal opening ceremony—attracted considerable attention from passengers.



No. 47, one of the last group of ten locomotives supplied by Crompton & Co. Ltd. for the Angel extension

In 1912, when an acceleration of the service was contemplated, the Stockwell-built locomotive No. 22 was equipped with geared motors giving 240 h.p. total, but the experiment proceeded no further.

The special features of the line, particularly the small tunnels, not only resulted in locomotive haulage finding permanent favour, but, under the late Mr. McMahon's able direction, led to clever and highly successful design work, producing machines of high efficiency capable of giving a rapid and frequent service of trains, and with most moderate operating and maintenance costs, when all the difficulties are considered.

## Electrification of the Bologna-Trento Line

**A**N official ceremony to inaugurate electric traction on the Bologna—Trento line, 205 km. (127 miles) in length, of the Italian State Railways was held on November 15 last. The Italian Minister of Communications, Host Venturi, was accompanied on the inaugural trip by Dr. Kleinmann, the German State Secretary of the Ministry of Transport. Various important Italian and German officials also took part. An article in the *Popolo d'Italia* of November 16 discussed the importance of this newly-electrified section. It would provide better communication between Italy and Germany, and also generally between Central Europe and the Mediterranean, a matter which was expected to be of great importance after the war. Electric traction was now available uninterruptedly over a distance of 1,452 km. (902 miles) between the extreme south of Italy and the Brenner. With this newly-electrified section, 5,423 km. (3,370 miles), out of a total of 17,051 km. (10,595 miles), or 32 per cent. of the Italian State Railways, had now been electrified. According to the *Popolo d'Italia* article, the electrified lines carry altogether some 60 per cent. of the total traffic of the railways.

Work on the electrification of the Bologna—Trento line began in April, 1940, the route distance of 205 km. (127 miles) being equivalent to 482 track km. (299 track miles). The hydro-electric energy installed in connection with this work has a capacity of 24,000 kW. The line beyond Trento to Brennero, where it joins the Reichsbahn, was already electrified on the old Italian standard 3-phase, 3,700-volt system.

Power is carried at 130,000 volts to six substations, where it is transformed into direct current at the present standard Italian railway voltage of 3,000. The power transmission cables are steel-cored aluminium, and are carried on high-tensile steel standards of a much lighter type than would have been necessary had ordinary structural steel been used. Twelve blocks, containing 84 flats, have been built in connection with this line for the technical and operating staff. It is expected that the electrification of the line will effect a saving of about 85,000 tons of coal per annum.

**MOTOR-NOSE SUSPENSION SPRINGS.**—When 2,000 new rubbers for tractor motor nose suspension were required some time ago on the Buenos Ayres Western Railway, a stock of obsolete coach auxiliary springs which had been removed from rolling stock were cut in two and used for the purpose, thus avoiding the purchase of new rubbers and the delay in receiving them.

**SWEDISH ELECTRIFICATION.**—In addition to the lines listed as under conversion at p. 501 of our issue of November 14, 1941, the Swedish State Railways are electrifying the Hälsingborg—Hässleholm line, a private railway recently taken over by the State. Another section of the Bergslagen Railway, from Kil to Daglösen, 37 miles, was turned over to electric operation on the standard single-phase system a short time ago.

## MACHINE TOOLS FOR RAILWAY SHOPS

### *Latest type of Kendall & Gent vertical milling machine*

**T**HE illustration on this page shows a Kendall & Gent vertical milling machine bearing the maker's classification CVM 40. This is available in two forms, the standard and the long speed range models. Both machines are similar with the exception of the head mechanism. The standard-head model which we illustrate has a speed range of from 9.5 to 238 r.p.m., and is designed to facilitate the selection of the correct cutting speed for a given material. The usual conversion of spindle revolutions to surface speed of cutting is eliminated. Nine spindle speeds are obtained directly from a single control lever. These are not in geometrical progression, but in the progression of cutter diameters from 1½-in. to 12-in. It is therefore necessary for the operator only to set the speed selector to the diameter of cutter in use. In the opposite side of the milling head, pick-off gears provide the selected surface speed of cutting. Here, five changes are usually available, 30, 40, 50, 60, and 80 ft. a minute. These can be modified to some extent.

The milling head is fitted to the column ways with full-length adjustable strip for wear compensation. A horizontally flange-mounted constant-speed reversible motor at the top of the column raises and lowers the head, and is controlled by push buttons. An electric limit-switch prevents over-running upwards, and the downward movement can be limited by means of an adjustable dead stop. Contact with this stop operates a slipping clutch, positively avoiding over-run and consequent risk of damage. A simple but very effective lock secures the head in position during milling.

The spindle is of heat-treated high-tensile steel and runs

in anti-friction bearings which take the radial load. Double-thrust washers take the reaction of the cut and the weight of the spindle. The drive is through six splines in a precision broached driving wheel, and the base is of substantial construction with the main sliding surfaces and table guides directly under the milling spindle; this gives ideal table support under cut. Two well-spread auxiliary sliding surfaces ensure the necessary stability of table. The construction also incorporates chip discharge-chutes to either side. The base rear extension on which the column is rigidly mounted forms the coolant tank and the drip channels round the base drain into this tank.

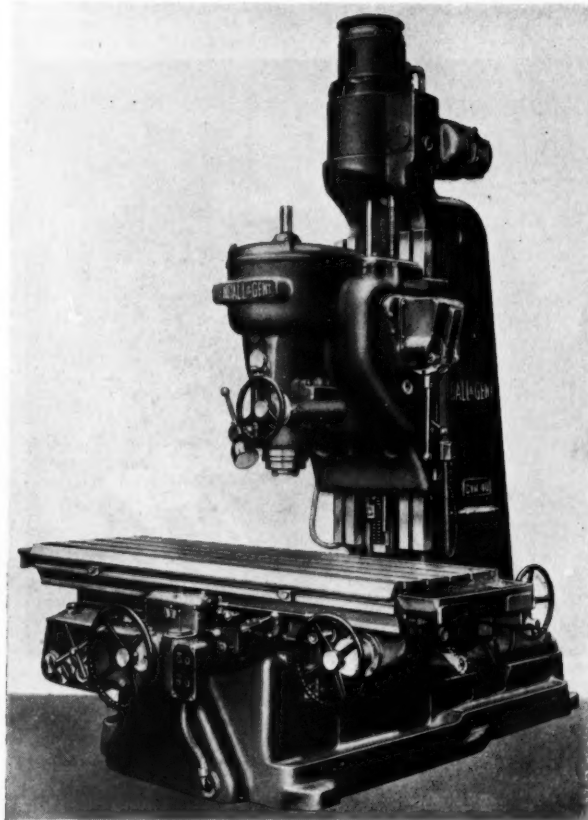
The column carrying the milling head, driving motor, and elevating motor is massively proportioned. Its broad base is secured to the base extension both horizontally and vertically, and this ensures perfect rigidity and correct alignment. The vertical slides for the milling head have the same hard densified characteristics as the slide ways of the base. The electrical control gear is built into the side of the column. The gear is easily accessible by a swing door which, when opened, automatically cuts off the current.

The table is of deep section with tee slots cut from the solid. Table feeds are reversible and obtained from a horizontal endshield mounted constant-speed motor coupled through suitable reduction gearing to the change feed box. The box is mounted under the left-hand end of the table with clearly lettered direct reading feed change indicator projecting to the front.

The drive is by vertical endshield mounted constant-speed motor at the top of the column, thence through high-efficiency worm reduction gear, gearbox, and finally to the spindle by another high-efficiency worm and wheel (standard head only). The coolant system is by electric impeller pump at the rear of the base and is push-button controlled. From the table the coolant is strained before returning to the sump.

The long speed range model has a speed range of from 15 to 840 r.p.m., selection is solely by levers. A lever on one side of the head gives high or low range speeds and a selector on the opposite side the particular speed required from either range.

A well produced brochure describing the CVM 40 machines in detail and containing numerous illustrations has been prepared by Kendall & Gent (1920) Limited, of Victoria Works, Gorton, Manchester.



*General view of new Kendall & Gent milling machine*

### **Rail Detection Cars and Track Circuits**

The method of detecting defective rails by means of the Sperry, or similar forms of apparatus car, employing the transmission of powerful currents through the rails, reaching several thousand amperes on occasion, has been found liable adversely to affect the working of d.c. track circuit equipment, enough extraneous current sometimes reaching the track relay to energise it irregularly, and American signal engineers have for some time been obliged to consider how best to deal with the possibility of false clears where rail detection cars are operating. No difficulty is met with, however, where a.c. track circuiting is used. At the October meeting of the Signal Section of the A.A.R. at Colorado Springs, some signal engineers stated that telegraph block had to be instituted to provide special protection for the fissure detection cars, and that one practice was to have an ordinary rail motor car following at a suitable distance to make sure that the track circuit is effectively shunted and the automatic signal protection ensured. In addition, a flagman is put out to give extra hand signal protection. The association is of the opinion that rail fissure cars cannot be operated safely over d.c. track circuits without special measures being taken.



### British Railways and the War—104



*Left: One of seven A.E.C. Regent buses which the London Passenger Transport Board has loaned to the Sheffield Transport Department to assist in easing local transport problems which have arisen through the need for providing travelling facilities for war workers (See page 345)*



*The Southern Railway is making untiring efforts to assist in meeting the need of the Ministry of Supply for 100,000 tons of waste paper a year for munition making. Above are shown two stages in the salvage of waste paper*

To stimulate interest among the staff the company's film unit has made and produced a film entitled "Saving Our Scrap," which is touring the system in the S.R. mobile cinematograph van. During last year 956 tons of waste paper were retrieved on the Southern Railway, including 35 tons from old records; on every station platform there is a receptacle which bears the words "Put Your Salvage Here." The Salvage Officer has been authorised by the General Manager to enter any of the company's premises for salvage purposes

## RAILWAY NEWS SECTION

### PERSONAL

Lord Leathers has appointed Mr. Ernest Henry Murrant to be Ministry of War Transport representative in the Middle East, in succession to Sir Henry Barker, who has recently relinquished this position. Mr. Murrant is Deputy-Chairman of Furness, Withy & Co. Ltd.

Mr. P. Noel-Baker, Joint Parliamentary Secretary, Ministry of War Transport, has appointed Mr. C. C. V. Goad to be his Private Secretary.

The Secretary of State for the Colonies has approved the appointment of Mr. R. F. Allan, Clerk, Railway Department, Tanganyika, to be Assistant Accountant, Railway Department, Sierra Leone.

M. Lazar Kaganovich, People's Commissar of Railways, has been included in the State Defence Committee, the U.S.S.R. War Cabinet.

Mr. Maurice Hely-Hutchinson, M.P., has been elected Chairman of Tanganyika Concessions Limited, which controls the Benguela Railway Co. Ltd.

Mr. Joseph B. Eastman, Chairman of the U.S. Interstate Commerce Commission, was appointed Director of the Office of Defense Transportation by President Roosevelt on December 23.

Mr. A. P. Reynolds, Managing Director of Dublin United Transport Co. Ltd., has been appointed Chairman of the Great Southern Railways Company, under Emergency Powers Order, No. 152, made by the Eire Government. Under the provisions of the same Order, which was summarised in our issue last week at page 318, the directors of the company have elected four of their number—Mr. James MacMahon, Mr. James P. Goodbody, Dr. Lombard Murphy, and Major Hugh A. Henry—to act as shareholders of the company from February 24. Sir Walter Nugent, Bart., the outgoing Chairman of the company, intimated that he did not seek re-election.

#### THE INSTITUTE OF TRANSPORT

The council has approved the following elections to corporate membership:—

##### Member:

Mr. E. G. Whitaker, Assistant Director of Transport, Ministry of Food, Colwyn Bay.

##### Associate Members:

Mr. N. H. Cooper, Chief Transportation Officer, Ministry of Supply, Liverpool.

Mr. A. J. Fletcher, L.M.S.R.

Mr. W. Fraser, Secretary, Accountant & Traffic Manager, Trent Navigation Company, Nottingham.

Mr. R. H. Moll, Secretary, Grand Union Canal Carrying Co. Ltd., London.

Mr. G. L. Paton, Kenya & Uganda Railways & Harbours.

Mr. P. J. Floyd, Traffic Manager, Great Southern Railways of Ireland, who, as recorded in our issue of February 20, has retired under the new age limit of 65 set by the company at a recent meeting, entered the service of the Great Southern & Western Railway in May, 1891. In January, 1898, he was transferred to the office of the Superintendent of the Line, and in January, 1902, he was appointed Chief of the Trains Department—an im-

portant section of the office of the Superintendent of the Line. In May, 1906, he became Superintendent in Charge of the Northern district, and when the position of Superintendent of the Line fell vacant in November, 1919, he returned to headquarters in that capacity. In November, 1924, he was appointed Operating Superintendent of the amalgamated lines in the Free State, and his appointment as Traffic Manager dates from May 1, 1928. Mr. Floyd's term of office covered some of the most exacting periods of the railway's history, and in his earlier days he had to contend with the problems arising from the South African War, when all troops for the front went via Dublin and Queens-town, and also, of course, with those arising out of the war of 1914-1919. Mr. Floyd took a great interest in the Irish branch of the Railway Benevolent Institution, for which he was a hard and consistent worker. He was first elected its Chairman in 1930; this was probably the

first occasion on which an officer other than a General Manager had been selected for the position. He held the chairmanship on a number of occasions and organised sweeps in the hope that the result would make the amount received in Ireland equal to payments made in benefits on that country without calling on the parent institution to meet a deficit which had arisen; two sweeps yielded over £2,600. On a number of occasions the amount subscribed by the Irish branch of the Railway Benevolent Institution, due to the initiative of Mr. Floyd, was very large and attracted grateful comment at the annual meeting of the Institution. In 1938, for instance, out of a total of £12,875 Mr. Floyd was responsible for £2,804; in the previous year similar figures were £13,080 and £2,953.

Mr. John Williams, Expenditure Accountant, South African Railways & Harbours, has been appointed Chief Accountant.

The Executive Council of the Canadian Chamber of Commerce in Great Britain has elected Mr. P. A. Clews, European Manager, Canadian National Railways, President for the ensuing year.

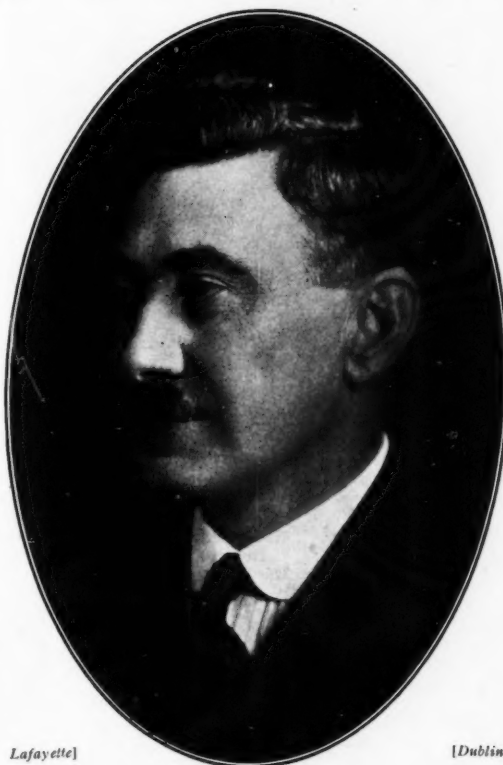
Mr. Robert Bernays, M.P., who has been a Deputy Regional Commissioner in the Southern Civil Defence Region since May, 1940, has decided to offer himself for military service and has, therefore, relinquished his appointment. To fill the vacancy, the King, on the recommendation of the Minister of Home Security, has approved the appointment, as from April 9, of Major-General Robert John Collins, C.B., C.M.G., D.S.O.

#### INDIAN STATE RAILWAY CHANGES

Mr. G. A. Rowleson, M.C., Asst. Traffic Manager, B. & N.W. Railway, has been appointed to officiate as Traffic Manager, B. & N.W. and R. & K. Railways in place of Mr. Hannay.

Mr. R. Whitworth, Signal Engineer, E.B.R., has been permitted to retire from Government service as from October 13, 1941.

Mr. Francis Charles Buller, Estate Agent of the London Passenger Transport Board, who, as recorded in our issue of May 3, 1940, was due for retirement but whose services were retained temporarily in connection with rating matters, has now retired. Mr. Buller joined the Underground group as Estates Manager in 1913 from Messrs. Viger & Co., Chartered Surveyors. He was made Estate Agent and an officer in 1921. In 1935 he became a principal officer. Mr. Buller's duties have included the management of the board's several ancillary properties and other sources of auxiliary revenue such as stalls and automatic machines on stations. He has been responsible also for the acquisition of all



[Lafayette]

[Dublin]

**Mr. P. J. Floyd**

Traffic Manager, Great Southern Railways, 1928-1942

properties needed by the board for the purpose of its undertaking and for matters appertaining to rating and taxation, and questions of town planning. Mr. Buller is a fellow of the Institute of Chartered Surveyors, a member of the Rating Surveyors' Association and in 1939 was Chairman of both the Railway Estate Agents' Conference and the Association of Railway Rating Surveyors.

Mr. Richard Joseph Howley, C.B.E., who, as briefly recorded at page 311 last week, has been elected Chairman of the British Electric Traction Co. Ltd., in succession to the late Mr. J. S. Austen, is a son of Lt.-Colonel John Howley of Limerick. He was educated at Oscott College, and Royal University, Dublin, and was trained as a civil engineer. For some years he was engaged on railway, light railway, and dock construction, before joining the British Electric Traction Co. Ltd., in August, 1899, as Assistant Permanent Way Engineer. In January, 1901, he was appointed Assistant Construction Engineer to the B.E.T., and in May, 1902, became Permanent Way Engineer to a number of associated companies. Between 1912 and 1919 he was Joint Manager of the B.E.T., of which company he became a director in 1923, and in 1929 Deputy Chairman. He was a member of the Tramways (Board of Trade) Committee, and the Railways Priority Committee, 1917-1919, and in 1919 was made a C.B.E. He is President of the British Electrical Federation Limited, Chairman & Managing Director of the Birmingham & Midland Motor Omnibus Co. Ltd. and the National Electric Con-



Elliott]

[&amp; Fry

Mr. R. J. Howley, C.B.E.

Elected Chairman, British Electric Traction Co. Ltd.

struction Co. Ltd., Chairman of the Birmingham & District Investment Trust Limited, the Northern General

Transport Co. Ltd., Stratford-on-Avon Blue Motors Limited, the Sunderland District Omnibus Co. Ltd., the Trent Motor Traction Co. Ltd., the Tyneside Tramways & Tramroads Company, the B.E.T. Electricity Supply Co. Ltd.; a director of the Electrical Finance & Securities Co. Ltd., and Chairman of a number of associated electricity supply companies, and a director of Tilling & British Automobile Traction Limited, and the Buenos Ayres & Pacific Railway Co. Ltd.

We regret to record the death, at the age of 83, of Lord Selborne, who was Joint Vice-Chairman of Forestal Land, Timber & Railways Co. Ltd.

Mr. William Slater, Deputy Assistant Goods Manager of the Lancashire & Yorkshire Railway Company from 1913 to 1919, who died on February 10, entered the service at Houghton, near Preston, in 1866. He was appointed Goods & Passenger Clerk and, later, telegraph work was added to his duties. In 1871 Mr. Slater was transferred to the Goods Department at Darwen and from there, in 1873, to the District Goods Superintendent's Office at Bury. From Bury he was promoted, in 1881, to the position of Chief Claims Clerk in the Goods Manager's office, Manchester; and later, the work in connection with outstanding accounts was placed under his immediate supervision. In 1913 Mr. Slater was appointed Deputy Assistant Goods Manager, which position he retained until his retirement in 1919.



Back row (standing): Mr. C. S. Mehta (Me.S.Ry.); Mr. J. P. Jain (D.R.L.Ry.); Mr. J. M. Pandya (G.Ry.); Khan Bahadur M. A. Rashid (G.B.S.Rys.); Mr. A. T. Pegge (B.L.Ry.); Mr. D. Y. Anderson (J.S.Ry.); Mr. C. A. Crawford (E.I.Ry.); Mr. R. de K. Maynard (M.S.M.Ry.); Mr. K. R. Ghatge (G.L.Ry.); Mr. A. Boxall (N.S.Ry.); Mr. T. Christian (I.R.C.A.); Rai Sahab Girdharlal D. Mehta (J. & D. Ry.); Mr. K. C. De (E.I.Ry.).  
2nd Row (standing): Mr. J. H. Bavin (A.B.Ry.); Mr. G. T. Simpson (J.Ry.); Rai Bahadur N. C. Ghosh (E.I.Ry.); Mr. R. S. Tripathi (Dh.S.Ry.); Mr. N. R. Green (Morvi Ry.); Mr. A. L. Anderson (B.N.Ry.); Mr. A. M. Robertson (B.N.Ry.); Mr. R. W. F. Butterfield (B.B. & C.I.Ry.); Mr. B. Moody (N.W.Ry.); Mr. R. N. Mirza (M.S.Ry.); Mr. H. A. Reid (S.I.Ry.); Mr. J. B. Remington (G.I.P.Ry.); Mr. Frank D'Souza (Bk.S.Ry.); Mr. V. L. Deau (I.R.C.A.).  
Front Row (sitting): Mr. J. F. C. Reynolds (S.I.Ry.); Mr. J. R. Izat (B. & N.W.Ry.); Mr. L. P. Misra (E.B.Ry.); Lt.-Colonel E. W. Slaughter (N.S.Ry.); Mr. C. G. W. Gordon (M.S.M.Ry.); Mr. G. C. Laughton (B.B. & C.I.Ry.); Mr. A. Duncan (President, I.R.C.A.); Mr. J. W. Gordon (J.Ry.); Mr. G. E. Cuffe (G.I.P.Ry.); Mr. R. E. Marriott (E.I.Ry.); Mr. A. C. Griffin (N.W.Ry.); Mr. R. G. Manson (A.B.Ry.); Mr. G. St. G. Higginson (B.N.Ry.).

#### INDIAN RAILWAY CONFERENCE ASSOCIATION

Group taken at New Delhi, during the 43rd session which opened on November 15, 1941

(See our issue February 6, page 213)



## TRANSPORT SERVICES AND THE WAR—130

### *London tube station shelters—Protected and Regulated Areas in Scotland—Continental travel restrictions—Fuel shortage in Bohemia—Reichsbahn traffic in 1941—A railway for Albania*

Discontinuance of the use of London tube stations as dormitory air raid shelters is being considered by the authorities. It is estimated that there is now shelter accommodation with bunks for 5,300,000 persons, and that the tubes provide accommodation for fewer than 100,000. Moreover, a recent census revealed that only about 3,000 adults and 300 children were now sleeping in tube bunks throughout London. If the tubes are closed as shelters, they can always be reopened for this purpose during renewed heavy air raids. The bunks and equipment will not be removed, but will be maintained in condition for immediate use in emergency. Since the winter of 1940-41, very considerable increases have been made in the shelter available in commercial buildings to ticket-holders.

#### **London Buses for Provincial Service**

During the severe air raiding season of the winter of 1940-41, large numbers of provincial buses were loaned for service in London, it may be remembered, and details of the maximum fleet of 467 were given at page 449 of our issue of April 18, 1941. More recently the compliment has been returned, and about 100 buses have been loaned by the London Passenger Transport Board to various provincial undertakings which are in need of strengthened services by reason of the requirements of munition works, evacuation headquarters, and so forth. All are A.E.C. vehicles acquired when London Transport took over the London bus business of Thomas Tilling Limited. The illustration on page 342 shows one of seven double-deckers which have joined the large A.E.C. fleet of the Sheffield Corporation Transport Department. Others are being hired by the Trent Motor Traction Co. Ltd., pending the delivery of new vehicles to that company. Further units have passed into the hands of the Devon General Omnibus & Touring Co. Ltd., and the first of several entered local service at Torquay during January and were later placed to work on the Torquay-Paignton route.

#### **North of Scotland Protected Areas**

By new and amended Orders made under the Defence Regulations, the Secretary of State for War has released a large part of the North of Scotland (commonly known as No. 1) Protected Area from being subject to the restrictions of a Protected Area. This has been a Protected Area since March 11, 1940 (see our issue of March 8, 1940, page 354). Under the new Orders, which came into effect on March 1, the parts of this No. 1 Protected Area which remain subject to the Protected Area restrictions have been re-constituted as three separate Protected Areas, known as Nos. 1, 2, and 4. With the exception of certain specified classes of persons (e.g., members of His Majesty's Forces and holders of certain official passes) no one other than a resident, will be allowed to remain in or enter any of these Protected Areas without a military permit for that particular area. Forms of application for permits to enter these Areas should be made to the Military Permit Officer at 49, Castle Street, Edinburgh; or 141, Bath Street, Glasgow; or to the Passport Office, Dartmouth Street, London, S.W.1. Residents within any of these Areas who may wish to leave it and return from time to time, or whose movements inside the area may bring them into contact with Control Posts or Patrols, will be called upon to produce evidence that they do reside within that area. The certificates of residence (known as D.R. Forms 16) issued to residents in the No. 1 Protected Area are no longer valid for any of the new Protected Areas and new certificates must be obtained from the nearest Police Station.

#### **North of Scotland Regulated Areas**

Each of the new Protected Areas recorded above has also been declared a Regulated Area under Defence Regulation 13 (a), and also a further area along the north-west, north, and north-east coast of the old No. 1 Protected Area. In these Regulated Areas restrictions may be imposed from time to time which will prevent persons not engaged on essential business from entering or journeying through particular districts. By-laws have also been made which affect the use of carrying of cameras, binoculars, and telescopes within the Regulated Areas or parts thereof.

#### **Road Law Loopholes Stopped**

By an Order-in-Council made in February, all traffic signs are now presumed to be legal unless the contrary is proved. One result will be to save time of courts, by avoiding as far as possible arguments as to whether signs are fractionally too large or too small, or whether they are sited strictly in accordance with regulations. Another point often raised in connection with alleged motoring offences, is whether a particular sign was erected with proper

authority. This point is nowadays sometimes difficult to settle, by reason of the destruction of records during air raids. Under the new order, defendants pleading lack of authority for signs will have to produce proof.

#### **Travel Restrictions in Norway**

Since February 9 all persons wishing to travel over the Oslo-Bergen railway have had to obtain a permit from the German Railway Administration in Norway. Permits are issued only if the urgent necessity of the intended journey can be proved, and it is said that a week's notice has to be given. Curtailments of passenger services on February 1 have reduced the Oslo-Bergen train service to three trains a week in each direction, as recorded at page 315 of our February 27 issue.

#### **Swedish Passenger Traffic Restrictions**

Reductions in passenger train services on the Swedish railways came into force on Monday last, March 2. The official announcement said the capacity of the railways is heavily taxed by goods traffic, on account of the ice in the Baltic and the restrictions on road traffic.

#### **Swedish Coaching Vehicles for Potato Conveyance**

About 50 coaching vehicles have been in service between southern Sweden (Skåne province) and Stockholm since early in January for the transport of potatoes. The reason for this unusual way of conveyance is that the demand for wagons fitted with the necessary heating piping are exceptionally great, due to the intense cold this winter. About 200 to 300 heated wagons a day are required for the transport of potatoes and other perishable food which would go bad if not protected from freezing under way, and that demand cannot be met in full with the limited number of suitable wagons available. Further wagons with piping installation are being built, but will not be delivered this winter. Shippers of perishable goods which cannot be exposed to the rigour of the winter have to wait up to ten days before being allotted wagons.

#### **Producer-Gas Motors in Sweden**

Producer-gas motor vehicles operating in Sweden on November 1, 1941, totalled 71,474, representing about 29 per cent. of the country's whole fleet of motor vehicles (see our January 16 issue, page 103). Of this total, about 39.5 per cent. use wood fuel, and the balance mainly charcoal. Included in the total were 39,000 motor lorries covering a weekly average of 8,445,600 miles. The 3,700 buses at the same date accounted for a weekly average performance of 1,341,360 miles. The number of producer-gas vehicles in Sweden continues to increase rapidly, and is estimated to have reached 75,000 by the beginning of the present year.

#### **Supply of Firewood to Stockholm**

The task of supplying Stockholm with fuel, heretofore met by shipping imported coal, has now fallen heavily upon the Swedish railways. It has been stated officially that the central authority responsible for the supply of fuel to the Swedish capital had no less than 43,912,204 cu. ft. of firewood conveyed to Stockholm over the railways in 1941, a quantity representing 34,000 wagon loads. In addition, 13,243,905 cu. ft. (375,000 cu. metres) of firewood were floated to Stockholm from northern Sweden by river and the coastal water. Arrivals of firewood by rail at Stockholm averaged 115 wagons every weekday in 1941; the record was on February 24, 1941, when arrivals totalled 243 wagons. The distribution of firewood brought to Stockholm by rail in the past year was made by motor lorry and totalled 170,000 loads.

#### **Further German Travel Restrictions**

Four official German announcements have been made in recent weeks regarding the urgent need to curtail railway passenger traffic.

Since December 10, 1941, all holiday travel has been prohibited until March 31, 1942, except for persons with special travel permits. (See our December 5 issue, page 594.)

A further curtailment of passenger services took place on January 18. The *Berliner Lokalanzeiger* explained that this reduction was necessary in order to enable the Reichsbahn to cope with the "extraordinary tasks by which it was confronted at the present time." The paper strongly advised persons who had to travel on account of urgent business to inform themselves beforehand at local enquiry offices about the running of trains. (See our issue of January 30, page 175.)

Additional reductions in the number of both long-distance and

local trains were announced on February 1, "because of the increasing requirements of the Russian Front."

On February 18 the German radio broadcast an announcement that "as a result of the continual overcrowding of express trains it is strictly forbidden to undertake journeys without urgent necessity. Those who disregard this order will be severely punished."

#### All German Fairs Cancelled

The Swiss paper *Der Bund* of January 20 had an advertisement of the Leipzig Fair, which was to be held from March 1 to 5, but three weeks later the *Berliner Lokalanzeiger* published a Decree of the Ministers of Propaganda and of Economics prohibiting all German Fairs in 1942. The paper explained that "all the forces of the German economy and of its transport system will have to be used without any restrictions for the victory of the German arms."

#### Use of Bohemian Wagons by Germany

As the result of the agreement concluded between the Bohemian-Moravian State Railways and the German Reichsbahn in 1941 (to which reference was made at page 301 of our February 27 issue), Bohemian-Moravian wagons are now being used by the Reichsbahn. The arrangement is said to have been made with a view to avoiding wagons returning empty to their bases, and the Bohemian-Moravian State Railways are entitled to make use of German wagons in a similar way. The Central Wagon Control Office of the Reichsbahn acts as the clearing house for the accounts arising from this common use of wagons.

#### Fuel Shortage in Bohemia

By reason of transport difficulties, wagon shortage for non-war traffic, and the increasing demands which have resulted from the severely cold winter, drastic steps have been taken in Sudetenland and the Protectorate of Bohemia & Moravia to restrict the consumption of fuel. In Prague the supply of gas has been turned off every day between 2 p.m. and 6 p.m. as from January 21. Later it was announced that similar measures were being taken throughout the country, except in Moravská Ostrava. On January 22 a Decree was published in *Der Neue Tag* forbidding the delivery of fuel to schools until further notice, and in Sudetenland Henlein ordered "cold weather holidays" for all schools from January 29 until February 11.

A breakdown of the tramway system in Prague caused by the extremely hard and persistent frost on January 26 resulted in the domestic electric supply being cut off for longer than originally intended. The German-controlled press has been at some pains to state that it was the weather, and not the war, that was to be blamed for the difficulty of supply; it had been the same in the winter of 1928-29, when there had been a serious shortage of coal because of the transport difficulties. By January 28 the tramway services were running again, except for temporary restrictions in the morning. According to a broadcast message of January 28 the order for shorter business hours in the interest of fuel economy was to be extended to all Government offices except the postal and railway services. From January 29 onward all offices were to begin work at 9 a.m.

#### Reichsbahn Traffic in 1941

In a recent article contributed to the *Vierjahresplan*, State-Secretary Kleinmann of the Reich Ministry of Transport surveyed the problems which arose in 1941 in the various spheres of transport. The amount of traffic which the railways had to carry was far greater than in 1940, and the main burden shifted from West to East. The greatest increase was in goods traffic, as the demands of the war industries and of the Army, and the supply of food to the civilian population, took precedence over everything else. The extent of the increase appears from the following table:—

	(1938 = 100)	1940	1941
Km. covered by goods trains ... ..		115	132
Km. covered by goods wagons ... ..		122	144
Tons of goods carried ... ..		163	176

The average load of a goods train increased from 641 tons in 1938 to 709 tons in 1940, and to 715 tons in 1941. Although the number of wagons taken by the Army rose considerably, the total of wagons at the disposal of the railways was stated to have remained much the same. In 1941, 18 per cent. more wagons were needed for the carriage of potatoes than in 1940, and twice as many as in 1938. The number needed for manure fell, but the same number as before was needed for sugar. The demands made upon the railways for building schemes of the most varying kinds were tremendous. Furthermore, Germany had to carry coal to European countries which formerly depended on Great Britain for supplies. Almost one-tenth of the entire German rolling stock was needed for the Eastern Territories. The Reichsbahn was, nevertheless, able to meet the vast demands upon it, as the number of wagons was increased by new construction, and by requisitioning in France and

Belgium. Despite shortages of material and of labour, the number of new locomotives built, which in 1940 was more than six times as many as in peacetime, rose in 1941 to ten times as many as in peacetime. In 1941 the number of wagons produced was twice as high as in 1940 and ten times higher than in the last year of peace.

#### Drastic Fuel Restrictions in Portugal

New petrol restrictions introduced on February 16 have virtually brought to an end all private motoring in Portugal.

#### Amalgamation of Luxembourg Railways

Preliminary steps have been taken towards the unification of the two Luxembourg standard-gauge railway systems, namely, the Prince Henri Railway (*Société luxembourgeoise des Chemins de fer et Minières Prince Henri*) and the Guillaume-Luxembourg Railway. The share capital of the Guillaume-Luxembourg Railway, amounting to about RM. 2,500,000, has now been reduced to RM. 1,400,000, and this is not the final step in the financial reorganisation. Amalgamation between the two companies is expected to take place at an early date. Both systems are at present under Reichsbahn management.

#### Limitation of Railway Passenger Traffic in Italy

With a view to restricting passenger traffic on the Italian railways, practically all special facilities were withdrawn on January 1, including the issue of return tickets, season tickets covering the whole of the State railway system, circular tickets, collective tickets, kilometre tickets, and special season tickets covering distances of over 100 km. (62 miles). At the same time, passenger train services were reduced, and it was reported that on some lines in the Milan area the curtailments were as high as 60 per cent. The services in the Rome area were drastically reduced on February 1, some by the withdrawal of 80 per cent. of the trains. Certain services were suspended entirely, and on other lines the timetable provides for only one train in each direction daily. On February 22 new regulations were introduced, limiting freedom of travel. Special police permission is necessary to travel to Sardinia, Dalmatia, Mentone, and other places.

#### Reduced Rates for Food Conveyance in Italy

A new organisation to exercise a more rigid control over the economic life and war effort of Italy is known by the lengthy name of the Interministerial Committee for the Supply and Distribution of Agricultural and Industrial Products and the Fixing of their Prices. It was established in Rome late in January with Mussolini as Chairman, and among the members are the Ministers of Finance, Justice, Communications, and Agriculture. Among decisions taken at the first meeting, on January 31, was one concerning the conveyance of foodstuff by rail. From March 1, the rate was reduced by about 25 per cent. for practically all such commodities, with the exception of wine and cider. As various concessions were previously in force for the conveyance of these, the reduction is only 10 per cent. By these measures it is hoped to arrest the sharp rise in the cost of living index which has been experienced in Italy recently.

#### A Railway for Albania

A standard-gauge railway is being built by the Italians from Durazzo (Drač) via Tirana to Elbasan, a distance of 83 km. (51½ miles). The track is understood to have been completed, and already to have been used for military purposes. To make it suitable for civilian traffic, 1,200 men are said to be employed on the work. Plans are stated to be under consideration for the extension of the line from Elbasan along the Shkumbi river and across the mountain range on the Yugoslav frontier to Struga in Yugoslavia, on the northern tip of Lake Ohrid, a distance of about 60 km. (37 miles). At Struga the line would connect with the 227-mile 2-ft. gauge railway to Podmolje, Tetovo, and Skopje. As mentioned at page 262 of our February 20 issue, the portion of this line south of Tetovo is in the Albanian-occupied part of Yugoslavia.

During the war of 1914-19 the Austrians, then in occupation of Northern Albania, built several décauville railway lines, including those between Skutari (Skadar) and Durazzo and on to Lushna and Berat; and between Durazzo, Tirana, Elbasan, and Fieri. All these lines were dismantled after the war, with the exception of that between Durazzo and Tirana, which was used for the transport of building material for the construction of the highway between the two places. Once the road was completed, the railway line was dismantled. Part of the formation of that line, 40 km. (25 miles) long, has been used for the construction of the present railway. In 1926 work was begun, somewhat half-heartedly, on making available for public traffic a railway between Durazzo and Tirana, which was intended to be the beginning of a railway system throughout the country. Some grading was completed, and a few small concrete bridges were built, but all work was suspended in 1929. In August, 1934, according to a Reuters message, the Albanian Government made proposals to the Yugoslav Government for the construction of a standard-gauge railway from Tirana to Skopje, thus giving Albania access to the main railway system of Europe, but nothing came of the scheme.



## RAILWAY AND OTHER MEETINGS

## Belfast &amp; County Down Railway Company

The annual general meeting of the Belfast & County Down Railway Company was held in Belfast on February 26. Mr. James Hurst, J.P., Chairman of the company, presided.

The Chairman, in the course of his speech, said that the directors had taken the opinion of two eminent counsel on the question whether the 5 per cent. preference stock was cumulative, and they had held that it was.

The continuance of the war had had a very material effect on railway working in general and had been responsible for prosperity such as it had not enjoyed for a very considerable number of years. At the same time the increased gross receipts which it had earned and the additional net revenue which had accrued in consequence, was subject to liabilities, some of which could be measured exactly and others only estimated.

It was, therefore, a matter of congratulation that notwithstanding those very heavy liabilities, it had been found possible to make a distribution to the 4½ per cent. "A" preference and also to the 5 per cent. preference stockholders, in the latter case in respect of arrears of dividend for the years 1926, 1927, and 1928. In that connection had not the 5 per cent. stock been "cumulative" it would have been possible with the same amount of money which it had cost to pay those arrears, to have paid not only a year's dividend

on that stock, but also a full year on the 4 per cent. preference stock and 3 per cent. on the ordinary stock.

It had occurred to the board that it might be possible by means of making a further payment to the 5 per cent. stockholders, say at the end of June this year, provided funds were available, to come to some agreement with the holders of that stock whereby they would accept such payment and forgo the outstanding arrears of dividend, and also the cumulative right attached. It was understood that the Shareholders' Association favoured such a proposal.

The matter was one which primarily affected the 5 per cent. preference holders and was one which was dependent on their agreement, but if it should be found practicable to bring about such a rearrangement the financial standing of the company as a whole would be considerably improved and in any re-organisation of transport in Northern Ireland that improved position would be to the benefit of its stockholders.

The net revenue for the year was £135,625, or an increase of £116,139. Having made certain essential reserves £42,502 was available for distribution against £5,129 last year, which was a very satisfactory improvement. With that amount from which the interest on the 3 per cent. baronial guaranteed shares of £510 and the 4½ per cent. "A" prefer-

ence stock amounting to £2,250 must be deducted, the directors recommended that arrears of dividend on the 5 per cent. preference stock for each of the years 1926, 1927, and 1928 be paid on March 2, absorbing £37,221 and that the balance amounting to £2,521 be carried forward to the current year's account.

Traffic receipts continued to be maintained and showed substantial increases over the same period of 1941, but they could not hope to have the same high traffic increases which were experienced at Easter last year.

Lt.-Colonel A. R. G. Gordon, M.P., seconded.

Mr. George M'Cracken said that having paid the 5 per cent. stockholders three years' arrears they would still have £160,000 of liabilities outstanding and assuming that they paid off three years of arrears every year it would take five or six years to get ahead of that liability. They could not expect the war profits to continue for that period, and it seemed almost impossible to get over the difficulty. The Shareholders' Association would like to see that liability overcome or arranged for, and they would do their best to attain that object. They would discuss the position and meet the board.

Mr. J. Irvine said it seemed that the company was in the hands of the preference shareholders.

The report and statement were adopted and the retiring directors, Lt.-Colonel Gordon, and Mr. Kennedy Stewart, were re-elected. Local auditors in Messrs. J. F. Crawford and J. O. Wilson were appointed in room of Mr. H. S. Lord and Sir Harold Peat, resigned.

## Great Northern Railway Company (Ireland)

The annual general meeting of the Great Northern Railway Company (Ireland) was held in Belfast on February 26. Lord Glenavy, Chairman of the company, presided.

The Chairman, in the course of his speech, said that 1941 was a remarkable year. The total receipts, at £2,472,671, were greater than in any previous year of the company's history. Expenditure had increased substantially, as was inevitable with rising costs and prices both for staff services and supplies. Net income at £689,069, however, was the highest ever recorded. All parts of the undertaking, rail services, road services, hotels, and refreshment rooms and cars, contributed to this result. Only in the case of live-stock traffic were receipts less than those of the previous year, due to the outbreak of foot-and-mouth disease.

He reminded the shareholders, however, that in the wholly abnormal conditions of the time the results for one year were not necessarily indicative of future prospects. There were too many uncertainties in the situation. Supplies of fuel and other essentials must be a matter of continuous anxiety.

On several occasions the starting or arrival times of main-line trains had been altered to allow a longer time for the journey. The company had been driven to this course by the necessity for conserving fuel, by the desire to save the public avoidable inconvenience, and by the incalculable delays caused by the more and more intensive Customs examination on each side of the border and by police and censorship regulations.

With little opportunity since the outbreak of war to make any substantial

additions to a diminished rolling-stock, the company had been called on to carry in 1941 nearly four million more passengers, apart altogether from season-ticket-holders, and nearly half a million more tons of goods than in 1939.

The burden on the staff of providing, out of resources seriously reduced by the years of railway impoverishment, and under abnormally trying conditions, services adequate to cope with so large and sudden an increase in demand had been immense. The response of the staff, from top to bottom, to calls which had often involved them in serious overstrain, had been admirable.

Speaking of the steps taken to ensure that the undertaking shall be kept in such a condition as to be capable of rendering efficient service in post-war days, Lord Glenavy asked: "Have we not the right to ask that those steps be supported by adequate legislative or administrative measures to secure the future of public transport, which is the form of transport on which the great majority of the population has necessarily to depend?"

Mr. J. B. Stephens, Deputy Chairman, seconded the adoption of the report.

Senator Thomas M'Laughlin, Armagh, congratulated the directors and management on the results which had been achieved, but suggested that a larger dividend might have been paid to the holders of ordinary stock.

Mr. Fred Storey, Vice-Chairman of the Shareholders' Protection Association, also maintained that the dividend on the ordinary stock should have been higher. He welcomed the co-ordination of transport in this country, and expressed the

hope that it would not be allowed to relapse into senseless competition after the war.

Mr. J. J. M'Areavy, Newry, regretted that a Newry man had not been chosen to succeed the late Mr. W. H. B. Moorhead on the Board of Directors. He also referred to the inconvenience caused to passengers joining main-line trains at Goraghowood.

Mr. D. Curran, Newcastle, suggested that three members of the Shareholders' Protection Association should be nominated to fill the places of the three retiring directors.

The Rev. W. B. Allman said that when possible any alterations in train services should be made at the beginning of each month.

Mrs. Boyd, Newry, urged the directors to restore the sixpenny excursion fare from Newry to Warrenpoint.

Mr. P. T. Montford, Dublin; Mr. John M'Cullagh, Belfast; Mr. R. Dawson, Dublin, and Mr. George M'Cracken, Belfast, raised other points, to which Lord Glenavy replied.

Lord Glenavy said he had never thought that he would live to see the day when officials of the Shareholders' Protection Association would congratulate the directors of the company on anything. (Laughter.) He assured Mr. M'Areavy that a shelter for the convenience of passengers were under construction at Goraghowood.

The report was unanimously adopted.

The retiring directors, Messrs. J. Milne Barbour, R. Stanley Stokes, and J. P. Herdman, and the retiring auditor, Mr. H. Leopold Pim, were re-appointed.

The recommendation of the directors dealing with the payment of dividends was also adopted unanimously.

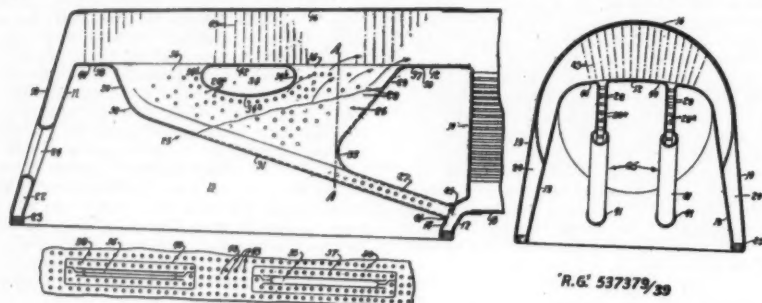


## ABSTRACTS OF RECENT PATENTS\*

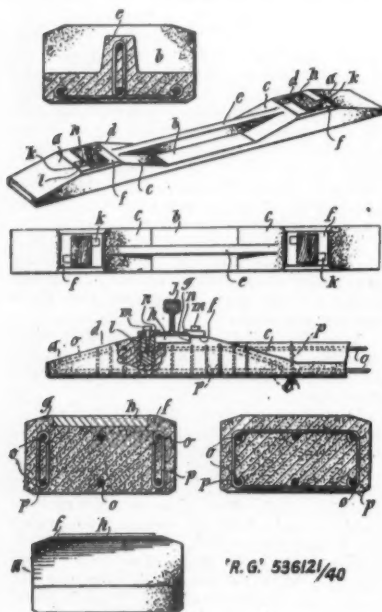
**No. 536,121. Sleepers**

John Leslie Jephson, of 106, Belmont Rise, Surrey, and John Walter Woods, of Riding Gate, Hurst Lane, E. Molesey, Surrey. (Application date: February 14, 1940.)

A reinforced concrete sleeper has chamfers *a* at the ends, a depressed central portion *b* having ramped sides *c* which thus form raised portions *d*, and a central web *e*. The raised parts *d* have rectangular faces *f* with square recesses *g* in which are fitted blocks *h* of wood which provide bearing surfaces for rails *j*. Additional recesses *k* are formed in the raised parts *d* to receive



soft metal insets *l* or insets of wood into which bolts *n* for the clips *n* (or chairs) are screwed. The insets *l* are preferably of lead, introduced during casting of the sleeper. The main high tensile steel rein-



forcing rods *o* are connected by stirrups *p*, the rods *o* extending lengthwise in three groups, the central group being coincident with the web *e* and the two outer groups being looped at each end to conform with the shape of the raised parts *d*. In some cases a pair of webs *e* may be provided. In addition, hard rubber insets may be used in place of the wood insets *h*, and the bolt

anchorage insets may be of tubular wood or fibre instead of lead.—(Accepted May 2, 1941.)

**No. 537,379. Thermic Firebox Syphon**

Geoffrey Gordon Barker, of Furnival House, 14-18, High Holborn, London, W.C.1. (A communication from Locomotive Firebox Company, of 310, South Michigan Avenue, Chicago, Illinois, United States of America.) (Application date: December 18, 1939.)

A thermic syphon 25 for a locomotive firebox comprises a long hollow body 26 formed with a number of front and rear

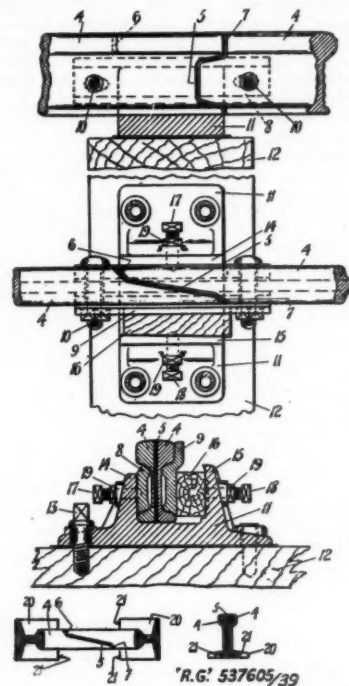
outlets 35 and 36 and at least one bottom inlet neck 27. The firebox consists of flue sheet 10, rear sheet 11, crown sheet 12, side sheets 13, and inner throat sheet 14. The wrapper sheet 16, the outer throat sheet 17, and the back sheet 18 of the boiler barrel 15 co-act with the outer side sheets 19 in providing water legs 20, front throat 21, and back water leg 22, all bottomed by a mud ring 23. There is a fuel door 24. The syphon body consists of side walls 28, front and rear walls 29 and 30, and a downwardly bulged bottom 31, which is connected with rear wall 30 by corner 32. Stay-bolts 28a connect the side walls 28. A rounded corner 33 joins front wall 29 and inlet neck 27. A considerable portion of the body overhangs the neck 27 and forms a pocket to the right of line A-A. In the upper central body portion an opening 34 is formed, this opening dividing the upper end of the body into front and rear outlets 35 and 36, each of which has a flanged top end 37 and 38, respectively, fitted in the crown sheet at 39 and 40, respectively. The front end of neck 27 is welded in the diaphragm opening 41 in the front throat sheet 14 of the firebox. Portion 42 of the crown sheet, which spaces the flanges 37 and 38, is connected to the wrapper sheet 16 by some of the radial stays 43.—(Accepted June 19, 1941.)

**No. 537,605. Rail Joints**

Robert Martin Lawson, of 138, Finnart Street, Greenock, Renfrewshire. (Application date: December 27, 1939.)

Each rail 4 has its ends shaped to form a main joint face 5 and end joint faces 6 and 7. Securing the rails together are inner fish-plate 8 and outer fish-plate 9 secured by bolts 10 which do not pass across the rail joint faces. A chair 11 is placed under each joint and is fixed to a sleeper 12 by coach-screws 13. The inner jaws 14 and outer jaws 15 of the chairs 11 are about the same width as the rail joint overlap. A hardwood wedge 16 is driven between outer fish-

plate 9 and outer jaw 15, the jaw 14 bearing against inner fish-plate 8. A set-screw 17 locks fish-plate 8 in position, passing through jaw 14 into a socket in the fish-plate 8. Similarly, the wedge 18 is locked in position by a set screw 18 which is screwed through the jaw 15 into the wedge. Locking-nuts 19 lock the set-screws in position. The outside fish-plate 9 is extended upwards and shaped to lie snugly against the head of the rail joint (Figure 2).



and serves to support the load on the rail at the joint when a vehicle is passing over the joint. In order to apply the invention to flat bottom rails, the rail flanges 20, 21 must be cut away to reduce their length and thus enable the rails to be fitted into the chair 11 and clamped between fish-plates 8 and 9 as shown in Figures 4 and 5.—(Accepted June 30, 1941.)

COMPLETE SPECIFICATIONS  
ACCEPTED

536,188. Rossiter, R. C. Ventilator for use in buildings, ships, and vehicles.

536,121. Jephson, J. L., and Woods, J. W. Railway sleepers.

535,882. British Insulated Cables Limited, London Passenger Transport Board, Broom, T. C., and Powell, H. J. Switchfrogs for the overhead conductors of electric traction systems.

535,696. Lewis, W. Y. Water-tube steam generators of the field-tube type.

535,722. Woodhead & Sons Ltd., J., and Sanders, T. H. Drawbar springs for road and rail vehicles.

535,472. Walde, R. S., and Blagden & Co. Ltd., V. Means for loading goods into vehicles and elsewhere.

535,440. Westinghouse Brake & Signal Co. Ltd. Electric remote-control systems.

535,486. British Timken Limited, and Doughty, E. H. Crank-pin bearing ends of connecting or coupling rods, eccentric rods, and the like.

535,552. Westinghouse Electric International Company. Guides for sliding doors.

\* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. The full specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2 price 1s.

## New Bridge near Dorval, C.N.R.

To eliminate a level crossing, a new skew bridge of 125 ft. span and embodying some novelties in design was rolled into position within six hours between trains

In the Overseas columns of our issue of January 23 last our Canadian correspondent reported the rapid rolling into position of the new 125-ft. span girder bridge near Dorval on the Canadian National Montreal-Toronto main line. The following are a few more details of this rapid piece of work.

To eliminate a level crossing on this busy section of line, it was decided to divert the road and slope it down in cutting so that it could be passed under the railway by a skew underbridge. The construction of the bridge under traffic was carried out as follows: Falsework in the shape of timber piles, stringers, and tiers was first erected under the two tracks, and the permanent abutments were then built up in spaces between the pile-bents. Meanwhile, erection of the new girder span was carried out on timber falsework beside the temporary bridge then carrying the railway, in such a position that it could be rolled across on the skew until it was in alignment with the tracks and over the abutments.

### Rolling the Span into Position

When all preliminaries were complete, a Sunday—when there were six hours during which the engineers could have possession of the line without interfering with traffic—was selected, and at the appointed time the work went ahead without a hitch despite almost continuous snow and rain. After the passing of the Continental Limited from Vancouver, the eastbound track was cut and dismantled, and half-an-hour later when the Toronto and Chicago express La Salle had passed the westbound track was similarly dealt with. The rails were removed, the temporary decking dismantled, and the piles were cut off and their tops and the capping timbers of each pile-bent slung clear bodily by steam breakdown cranes working at each end of the bridge. The latter job was necessary so as to clear the new span when it was rolled into position.

The actual rolling was effected by two donkey engines each hauling on a steel cable attached to one end of the lower boom of the span. When the span had been truly aligned with the tracks on each side, it was jacked up clear of the rollers, which, with the traversing rails, were then removed, and the span was lowered on to its bed plates on the abutments. The rails removed from the temporary bridge meanwhile had been quickly relaid on the new permanent span, and the bridge was ready for the passage of the International Limited without delay. The span complete weighs 800 tons.

### Features of the Design

The new span consists of two main plate girders, spaced at 31-ft. centres, and transverse steel floor beams 10 ft. 9½ in. apart centre to centre. The flooring is of reinforced concrete slab and beam construction. This design effected a saving of about 175 tons or 40 per cent. in flooring steelwork as compared with the more usual use in Canada of an all-steel flooring. It also avoided the necessity for splaying out the tracks over a long distance to widen their spacing so as to allow for the girders between them. Another feature, which is, however, no novelty on the C.N.R., is the use of malleable iron chairs to carry the flat-bottom track across the bridge, bolted directly to the concrete deck. Sleepers or timbers, ballast, and waterproofing are

thus eliminated, and perfect results are claimed for the method here adopted. The chairs are spaced 1 ft. 9 in. apart longitudinally, and a malleable iron clip bolted down on each side of the rail secures its foot to the chair.

As previously mentioned, the design and fabrication of this bridge were carried out under the direct supervision of Mr. C. P. Disney, Bridge Engineer, Central Region, C.N.R., and the placing of it in position was supervised by Messrs. W. Murray and W. E. Bell, of the Dominion Bridge Company.

## L.M.S.R. Home Guard Presentation

Three L.M.S.R. Home Guards were presented on February 19 with Certificates of Good Service recently introduced by the Minister for War in recognition of deeds of gallantry or for having given exceptionally

### PAPER SALVAGE RESULTS

Many counties are achieving fine results in their collection of paper and metal. This is shown by the salvage figures for December, 1941. The figures are based on an average collection per 1,000 of the population. The quota aimed at is 20 cwt. per 1,000.

	cwt.
London	19.0
Gloucester	18.4
Leicester	17.7
Surrey	16.8
Middlesex	16.3
Cheshire	16.2
Buckingham	15.6
Hertford	15.3
Dorset	15.2
Essex	14.9

good service. Mr. Ashton Davies, Vice-President, L.M.S.R., made the presentation before some 200 officers, N.C.O.'s, and men representing the 16th City of London Battalion, and 37th County of London Battalion of the Home Guard. In handing

over the certificates Mr. Davies said that he wished to express his thanks and admiration for the work which the L.M.S.R. Home Guard had done and was doing throughout the system.

Lt.-Colonel W. O. Davies, T.D., Officer Commanding the 16th City of London Battalion proposed a vote of thanks to Mr. Davies.

Details of the awards are as follow:—

### 16th City of London Battalion

*Sergeant Lambert*: for excellent organising work in the battalion since its inception, efficient service, and for being the prominent force in the successful miniature rifle team of "A" Company.

*Lance-Corporal Dormer*: for displaying great gallantry when in charge of the Home Guard detachment during repeated enemy air attacks.

### 37th County of London Battalion

*Sergeant J. G. Holland*: for gallantry during a most severe air raid, extinguishing (assisted by two volunteers) 20 incendiary bombs which fell on railway premises.

## Questions in Parliament

### Economies in Tyre Usage

The measures to be taken for securing the maximum economies in tyre-usage are at present under examination by the department concerned in collaboration with representatives of the tyre manufacturing industry, and will be announced in the very near future.—(Mr. P. J. Noel-Baker, Joint Parliamentary Secretary, Ministry of War Transport, February 17.)

### Rationalisation of Deliveries

In co-operation with the Ministry of Food and the Board of Trade, meetings have been held in the regions and in all the main towns in the country at which retailers have been asked to prepare schemes for rationalising their deliveries so as to secure the maximum economy in the use of man-power, fuel, and vehicles. There has been an excellent response and we are now awaiting the formulation of schemes which will be brought into operation as soon as they are ready.—(Mr. P. J. Noel-Baker, February 18.)



Mr. Ashton Davies, Vice-President, L.M.S.R., presenting "Good Service" Certificates, issued by the War Office, to three members of the L.M.S.R. Home Guards. Left to right: Mr. Ashton Davies, Lance-Corporal Dormer, Sergeant Lambert, and Sergeant Holland

## Notes and News

**Canadian National Railways.**—Gross earnings during January were \$25,967,000, an increase of \$5,040,033, and operating expenses were \$20,809,888, an advance of \$3,033,315, leaving net earnings \$2,006,717 higher, at \$5,157,111.

**Danish State Railways.**—For December, 1941, the Danish State Railways had a surplus of about Kr. 670,000, against a deficit of about Kr. 320,000 for December, 1940, according to the Official German News Agency.

**Collision with Light Engine on L.N.E.R.**—Early in the morning of February 28 a passenger train on the L.N.E.R. collided with a light engine at Temple Mills, near Stratford; both engines and some coaches were derailed. Some passengers complained of shock.

**Brush Electrical Engineering Co. Ltd.**—This undertaking has placed privately £50,000 of 5½ per cent. cumulative preference stock and £27,000 of ordinary stock. The latest accounts available, those to December 31, 1940, showed ordinary capital in issue totalled £366,318 and preference capital £200,000.

**Jonas Woodhead & Sons Ltd.**—Holders of 5,000 £1 6 per cent. redeemable convertible cumulative preference shares of this company have converted their holdings into 20,000 5s. ordinary shares. The right to convert on the basis of four ordinary shares for every one preference share continues until March 1, 1944.

**Two Accidents at Crewe, L.M.S.R.**—On February 25, as the down Royal Scot express was nearing Crewe a coach became derailed but the driver succeeded in stopping the train without serious damage occurring. The line was blocked for some time and trains had to be diverted. On the same day the up Irish mail from Holyhead ran into the rear of another train standing in Crewe Station and there were some minor injuries to passengers.

**Railways in Argentina.**—It is reported by Reuters that the Argentine Government issued a statement on February 25, promising a solution of the railway problem with changed tariffs. Details were given in our issue of February 20 of the most recent memorandum submitted to the Government by the representatives in Argentina of the foreign-owned railway companies, in which the disabilities from which the railways suffered were outlined.

**Great Southern Railways (Eire).**—For the 7th week of 1942 the Great Southern Railways (Eire) reports passenger receipts of £29,446 (against £33,759), and goods receipts of £59,000 (against £52,951), making a total of £88,446, against £86,710 for the corresponding period of the previous year. The aggregate receipts to date are passenger, £215,247 (against £227,987), goods, £432,988 (against £351,570), making a total of £648,235 (against £579,557).

**Arica & Tacna Railway Company.**—The directors have issued a circular to shareholders recording the chairman's speech in October last when he referred to actions by the Peruvian Government which were resulting in it taking away the company's business. Negotiations were opened with the Government with the object of securing its permission for the sale of materials, buildings, and stores or, alternatively, for the Government to take over the railway. The company's agent

reported the breakdown of the negotiations and the directors instructed the general manager to make the best terms possible. He advised informing the Government that it would be necessary to suspend the railway service at the end of January as the company was at the end of its resources and could not continue working at a loss. The manager has cabled that the Government has taken over from February 1, and that the conditions are not known. The board considers it advisable that it should have sufficient powers to take any steps and conclude any deals affecting the company's rights and properties, and it therefore recommends an amendment to the statutes with this end in view. A meeting to consider the necessary resolution will be held at 69, Old Broad Street, E.C.2, on March 19, at noon. The Arica & Tacna Railway Company was incorporated in Peru in 1887 and operates 40 miles of the standard gauge railway under a Peruvian Government concession terminating on January 1, 1956, when the line reverts to the State.

**The Leopoldina Terminal Co. Ltd.**—A series of meetings of stockholders was held on February 10, by order of the High Court, after a meeting of the Leopoldina Terminal Co. Ltd., to consider proposals for the extension of the existing moratorium. It was stated after the meetings of the Leopoldina Railway Company that there had been only one adverse vote. At the meeting of the Leopoldina Terminal Co. Ltd. the scheme was approved without dissent; the meeting of the Leopoldina Terminal 5 per cent. first debenture stock was adjourned in the absence of a quorum.

**Control of Great Southern Railways.**—On February 19 the Government of Eire Information Bureau issued the following statement:—"The Government has made an Order under the Emergency Powers Act providing, *inter alia*, that as from February 24 the board of directors of the Great Southern Railways Company shall consist of a Chairman appointed by the Government and four directors representing shareholders elected in accordance with the Order. No decision of the board shall be arrived at without the concurrence of the Chairman who alone shall constitute a quorum of the board, and no meeting of the board shall be held unless the Chairman is present thereat. In pursuance of this Order the Government have appointed Mr. A. P. Reynolds, Managing Director of the Dublin United Transport Company, as Chairman of the Board of the Great Southern Railways." A summary of the Orders was given in our issue of last week, page 318; the names of the new directors are given on page 343.

**Dublin United Transport Co. Ltd.**—The Rt. Hon. James McMahon, P.C., Chairman, at the meeting of the company in Dublin on February 24, said that although in the past year the company had passed through many periods of acute anxiety it was in a position to show a substantial profit. For lack of materials it had been necessary to suspend plans for the cessation of the tramways, and shortage, and uncertainty of supplies generally had forced the company to restrict its routes and services. Fuel oil cost £153,500, an increase of £38,100; tyres had increased in cost by £1,250, and road tax was up by £3,100. The tax on a 56-seater bus was £196 a year compared with £108 in England. The iniquitous burden of £15,797 a year way-leaves for non-existent tramway lines was still imposed. Referring to the appoint-

ment of Mr. A. P. Reynolds, Managing Director of the company, as Chairman of the Great Southern Railways, he said that Mr. Reynolds had received permission of the board to comply with the Minister's request. The directors were convinced that the acceptance of the position would not prejudicially affect his contractual relations with their own company or in any way conflict with his obligations to the board or shareholders, and they had his assurance to that effect.

## British and Irish Railway Stocks and Shares

Stocks	Highest 1941	Lowest 1941	Prices	
			Feb. 27, 1942	Rise/ Fall
G.W.R.				
Cons. Ord. ....	43½	30½	39½*	- 4
5% Con. Pref. ....	109½	83½	109*	- 1½
5% Red. Pref. (1950) ..	105½	96½	105*	- 1
4% Deb. ....	113½	102½	114½	—
4½% Deb. ....	115	105½	115½	+ 1
4½% Deb. ....	121½	112	122½	—
5% Deb. ....	132	122	134	—
2½% Deb. ....	70	62½	70	+ 1
5% Rt. Charge ....	129½	116	130½	—
5% Cons. Guar. ....	128	110½	128½	- 1
L.M.S.R.				
Ord. ....	17½	11	17*	- 1½
4% Pref. (1923) ....	53	33½	51½*	- 1½
4% Pref. ....	68½	48½	68½*	- 1½
4% Red. Pref. (1955) ..	97½	77	97½	+ 1
4% Deb. ....	105½	97	106	- ½
4% Red. Deb. (1952) ..	110½	106½	109½	- 1
4% Guar. ....	100	85½	101½*	- 1
L.N.E.R.				
5% Pref. Ord. ....	3½	2½	3½	- ½
Def. Ord. ....	2	1½	1½	- ½
4% First Pref. ....	52½	33	50½*	- 1½
4% Second Pref. ....	19½	10	19*	- 1
4% Red. Pref. (1955) ..	79½	52	82*	—
4% First Guar. ....	90½	74½	92½	—
4% Second Guar. ....	80½	59	82½	—
3½% Deb. ....	79½	68½	80	—
4% Deb. ....	104	91½	104	- ½
5% Red. Deb. (1947) ..	106	102½	104	—
4% Sinking Fund Red. Deb. ....	103½	99½	102½	—
SOUTHERN				
Pref. Ord. ....	65½	43½	62½*	- 2
Def. Ord. ....	15½	9	15*	- 1½
5% Pref. ....	107	77½	105½*	- 2
5% Red. Pref. (1964) ..	107	89½	106*	- 1
5% Guar. Pref. ....	128	111	128½*	- 1
5% Red. Guar. Pref. (1957) ....	114½	107½	113½*	- 1
4% Deb. ....	112	102½	113½	—
5% Deb. ....	130½	119	133	—
4% Red. Deb. (1962- 67) ....	108½	102	107½	—
4% Red. Deb. (1970- 80) ....	108½	102½	107½	—
FORTH BRIDGE				
4% Deb. ....	99½	90½	102½	+ 1
4% Guar. ....	99	85½	102½	—
L.P.T.B.				
4½% "A" ....	120½	109½	119½	—
5% "A" ....	130½	115½	129½	—
4½% "T.F.A." ....	103½	99½	100½	—
5% "B" ....	117	102	119½	—
"C" ....	46½	28½	39*	- 1
MERSEY				
Ord. ....	24½	19½	22½	—
4% Perp. Deb. ....	100	90	99½	—
3% Perp. Deb. ....	73½	63	72½	—
3% Perp. Pref. ....	58	51½	57	—
IRELAND BELFAST & C.D.				
Ord. ....	4	4	4	—
G. NORTHERN				
Ord. ....	14½	3	13½	+ ½
G. SOUTHERN				
Ord. ....	14½	5	11	+ 1
Pref. ....	17	10	19½	+ 3
Guar. ....	44	16	41½	+ 1½
Deb. ....	61	42	61	+ 4

\* ex dividend



## Railway and Other Reports

**Mersey Railway Company.**—At a meeting of the board held on February 25, it was resolved:—(1) To pay the full dividend of 3 per cent. on the perpetual preference stock, less income tax at 10s. in the £ for the year ended December 31, 1941; (2) To recommend payment of a dividend on the consolidated ordinary stock of £2 per cent., less income tax at 10s. in the £ for the year ended December 31, 1941. The dividend on the ordinary stock for 1940 was 1½ per cent.

**Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company.**—The total dividend for the year 1941 is again 4½ per cent. After allowing for estimated settlement in respect of Government control, there is a net revenue debit of £4,772 (same). The amount receivable from the L.N.E.R. and L.M.S.R. under the terms of the lease is again £6,672.

**Mexican Southern Railway Limited.**—The report for 1940 refers to the schemes of arrangement of 1927 and 1931, under which the net earnings of the Inter-oceanic System (in which the lines of the Mexican Southern Company are included) are pooled. The operation of the Inter-oceanic System for 1940 having resulted in a loss, no amount is receivable by the Mexican Southern Company on account of debenture interest under the schemes of arrangement.

**Buffalo & Lake Huron Railway Company.**—Rental for the half-year to December 31, 1941, payable by Canadian National Railways on March 1, 1942, was £35,000 (same) plus interest earned (gross) £44 (against £39). Interest on the 5½ per cent. bonds less tax absorbed £10,329 (against £11,878); London expenses were £521 (against £581); directors' remuneration was £250 (same); income tax £16,799 (£14,385); and N.D.C. £681 (same). The dividend was 5s. (against 4s. 10d.) a share less tax. The amount carried forward is £736.

**Dublin United Transport Co. Ltd.**—Gross traffic receipts for 1941 were £1,320,450, an increase of £132,568. Bus receipts were £1,164,281 (against £1,007,437), and tramway receipts £156,169 (against £180,445). Total net revenue was £225,972 (against £102,292). After providing £160,000 for taxation, and placing £25,000 to pension fund, final ordinary dividend is 3 per cent. making 5 per cent. less tax for the year (against 4 per cent.). The carry forward is £23,533 (against £21,561).

**Bristol Tramways & Carriage Co. Ltd.**—Total revenue for the year 1941 was £721,673 (against £525,696), fuel tax and vehicle licences were £126,276 (£105,719), war damage insurance £17,000 (£15,000), directors' fees, £2,200 (£2,469), income tax and E.P.T., £357,800 (£196,857); net revenue was £218,397 (£205,639). Ordinary dividend for the year is 10 per cent. (against 8 per cent.); reserve receipts, £50,000 (same), and the amount carried forward is £30,237 (£36,871). Final abandonment of tramways was effected last April, and bus services substituted. The company is controlled by Western National Omnibus Co. Ltd., which is jointly controlled by G.W.R. and National Omnibus Co. Ltd.

**Rangoon Port Commission.**—The Report for the year ended March 31, 1941, shows an excess of income over expenditure of Rs. 3,93,025. Receipts were higher at Rs. 74,09,407, compared with Rs. 72,78,207 in 1939-40, and expenditure was Rs.

65,99,382, against Rs. 67,35,123. The contribution of Rs. 1,50,000 to capital account, and the contributions to the Burma war donations of Rs. 2,67,000 brought the total expenditure to Rs. 70,16,382. The total net tonnage of vessels entering the port was 3,527,991, compared with 4,265,561 tons in the previous period.

**United Steel Companies Limited.**—Interim dividend is at the rate of 2½ per cent. less tax (same).

**Transport Services Limited.**—The directors have declared a second interim dividend of 6 per cent. per annum (same), again making 10 per cent. for the year to May 31, 1941.

**Manchester Ship Canal Company.**—Dividends for the year 1941 are as follows: 3½ per cent. on the corporation preference stock; 3 per cent. on the preference shares; and 1½ per cent. on the ordinary shares (all are the same as for 1940).

**Grand Canal Company.**—Net revenue for the year 1941 was £16,637 (against £16,884) and net profit after debenture interest was £15,539 (against £15,786). Dividend for the year was 1½ per cent. (same), and the amount carried forward is £2,611 (against £2,887).

**Vickers Limited.**—Final dividends for the year 1941, are: 2½ per cent., actual, less tax, on the preferred 5 per cent. stock; 2½ per cent., actual, less tax, on the 5 per cent. preference stock; and 2½ per cent., actual, free of tax up to 6s. in the £, on the cumulative preference stock.

**British Wagon Co. Ltd.**—Net earnings for the year 1941 were £86,567 (against £93,286); net profit was £13,972 (against £15,827). Interim dividend was 5 per cent. less tax (same), and final is 15 per cent. (against 12½ per cent.). The amount carried forward is £39,224 (against £38,252).

**Wagon Finance Corporation Limited.**—Wagon lease interest and other profits for the year 1941 were £55,917 (against £62,624), and income from investments, etc., was £1,135 (against £2,753). Net profit was £7,676 (against £12,465). Final dividend is 5 per cent., making 10 per cent. for the year (same), and £19,596 (against £18,170), is carried forward.

**London Midland & Scottish Stock Conversion Trust.**—Trustees state that the dividend declared by the L.M.S.R. on its ordinary stock for 1941 permits the payment of a dividend of £1 15s. per cent. less tax on the 4 per cent. preference stock of the trust (against £1 5s. 7½d. per cent. a year ago).

**Canadian Car & Foundry Co. Ltd.**—Net operating profit to September 30, 1941, was \$2,356,435, (against \$1,443,949). Net profit after fees and expenses, depreciation, and E.P.T. was \$701,886 (against \$477,580). After taxes of \$1,900,000 and other liabilities, and dividends on preference shares of \$1.32 per share, the surplus carried forward was \$7,564,905 (against \$3,205,705).

**BRISTOL TRAMWAYS & CARRIAGE CO., LTD.**—Mr. J. F. Heaton, presiding at the annual meeting on February 26, said that although wages and the cost of commodities had been higher, receipts had kept pace with the upward trend of costs. Taxation, however, had taken a heavy toll of the profits of the parent company and its subsidiaries. Profits had risen to approximately £51,600, but of this £43,365 was required to meet Excess Profits Tax.

## Contracts and Tenders

The Bengal-Nagpur Railway has placed an order, to the inspection of Messrs. Wolfe Barry, Robert White & Partners, with the Superheater Co. Ltd., for four superheater headers and 332 superheater elements. and with Associated Locomotive Equipment Limited, for two sets of cylinders for STS class locomotives.

The East Indian Railway has placed an order, to the inspection of Messrs. Wolfe Barry, Robert White & Partners, with the Jay Engineering Works Limited, Calcutta, for post type signal reversers.

Class I railways in the United States in 1941 put 80,502 new freight wagons in service, the largest number installed in any year since 1929, reports the Association of American Railroads. This is an increase of 14,957 compared with 1940. In 1929 the railways installed 84,894 new freight wagons. New freight wagons installed in service in 1941 consisted of 44,807 box, 30,938 coal, 1,752 flat, 2,200 refrigerator, 149 stock and 656 miscellaneous wagons.

Class I railways on January 1, 1942, had 74,897 new freight wagons on order, the largest number at the beginning of any year since the compilation of these records began twenty years ago. New freight wagons on order on January 1, 1941, totalled 35,702. New freight wagons on order at the beginning of this year consisted of 46,300 box, 23,638 coal, 1,400 refrigerator, 2,191 flat, 300 stock and 1,068 miscellaneous wagons.

New locomotives installed in service in 1941 by Class I railways totalled 633, of which 161 were steam and 472 electric and diesel. This was the largest number put in operation since 1930. In 1940, 419 new locomotives were put in service, of which 126 were steam and 293 electric and diesel.

New locomotives on order on January 1, 1942, totalled 546, consisting of 258 steam and 288 electric and diesel. On January 1, 1941, there were 206 on order, of which 115 were steam and 91 electric and diesel.

**NEW CABLE SUSPENSION RAILWAY FOR SWEDEN.**—An Official German News Agency message from Stockholm says that the Boliden Mining Company has placed a contract for the construction of a cable suspension railway, which will be the longest in Europe. The railway is to be about 100 km. (62 miles) long, and will cost Kr. 12,500,000.

## Forthcoming Meetings

- Mar. 6 (Fri.)—**London Midland & Scottish Railway Company.** (Ordinary general), Friends House, Euston Road, London, N.W., at 11.30 a.m.
- Mar. 6 (Fri.)—**London & North Eastern Railway Company.** (Ordinary general), Grosvenor House, Park Lane, W.1, at 2 p.m.
- Mar. 11 (Wed.)—**Great Southern Railways Company.** (Ordinary general), Gresham Hotel, Upper O'Connell Street, Dublin, at 2 p.m.
- Mar. 11 (Wed.)—**Great Western Railway Company.** (Annual general), Paddington Station, W.2, at 11.30 a.m.
- Mar. 12 (Thurs.)—**Southern Railway Company.** (Annual general), Beaver Hall, Garlick Hill, E.C., at 11.30 a.m.
- Mar. 30 (Mon.)—**Great Indian Peninsula Railway.** (Annuitants annual), Elmhyrst, Epsom Road, Guildford, Surrey, at 12.15 p.m.

## Railway Stock Market

Although the volume of business showed little improvement, a steadier tone has prevailed in the stock markets, aided by the rise in British Funds, which was due partly to reinvestment of proceeds arising from the vested India stocks. Reinvestment buying also tended to increase demand for home railway prior charges, which were firm and in some cases in very small supply. Home railway junior securities have failed to attract increased attention at the time of writing, despite the widespread recognition of the large and attractive yields; the tendency is to await further information as to the policy being adopted in regard to war damage contributions. It is hoped that additional references to the position may be made at the impending annual meetings, although for security reasons, it cannot be expected that particulars will be provided as to the actual liability to date under this head. Under the provisions of the financial agreement the companies will, of course, receive back the war damage expenditure which was charged against the 1940 pooled revenues. Bearing in mind that negotiations are still taking place with the Government, it may be that it is not possible to give any detailed picture of the position at this stage. The past year's distributions on the junior stocks were covered by rela-

tively small margins, but as it is apparent that the railways consider the ultimate liability for war damage as essentially a postwar problem, the prevailing assumption is that there continue to be reasonable prospects of dividends being maintained at the 1941 level during the war period, granted exceptionally heavy war damage is not suffered in the future. The very high yields ruling on home railway junior stocks must be regarded as due in a large measure to disappointment that uncertainty still surrounds the position as to the war damage liability.

Great Western ordinary remained under the influence of minor disappointment that highest market estimates in respect of the dividend were not realised, and at the time of writing the price has eased on balance from 40½ to 40¼. Great Western guaranteed was maintained at 128½, as was the 5 per cent. preference at 109, although the 4 per cent. debentures were slightly higher at 114½. The annual reports have naturally tended to draw still further attention to the high investment merits of the debentures and other prior charges. L.M.S.R. ordinary at 17 was within half-a-point of the price current a week ago, the 1923 preference eased from 52 to 51½, and the senior preference from 69 to 68. On the other hand, this railway's guaranteed stock was

again 101½, and the 4 per cent. debentures 106. The large yield of around 12 per cent. attracted rather more attention to L.N.E.R. second preference, which improved slightly to 19½, which compares with 19¼ a week ago. On the other hand, this railway's first preference was 50, a decline of two points on balance. Whereas L.N.E.R. first guaranteed was 93, compared with 92½ a week back, the second guaranteed eased from 82½ to 82. The yield on the second guaranteed is now fully 4½ per cent. which would seem attractive, bearing in mind that, on the basis of last year's figures, there was £5,109,748 available to meet the £1,107,879 required for the dividend on this stock. In accordance with the general tendency at the time of writing, Southern deferred has moved slightly lower; it is 14½ compared with 15½ a week ago, and the preferred was 62½. Southern 5 per cent. preference was fractionally lower at 106, but the guaranteed stock was maintained at 128½, as were the 4 per cent. debentures at 114. London Transport "C" was 38½, compared with 39 a week ago.

Argentine railway stocks have been assisted by renewed hopes that a revision of freights may be granted; some satisfactory gains were recorded among the debenture issues. Indian railway stocks have been marked down on the war news, but Canadian Pacific were inclined to show response to dividend possibilities.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1941-42	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1941		Totals		Increase or Decrease		Highest 1941	Lowest 1941	Feb. 27 1942	Yield % (See Note)			
						This Year	Last Year									
South & Central America																
Antofagasta (Chili) & Bolivia	834	22.2.42	£ 8,680	—	£ 8,960	8	£ 144,910	£ 136,410	+	£ 8,500	Ord. Stk.	10½	3½	10	NII	
Argentine North Eastern	753	21.2.42	ps. 136,300	+ ps. 30,900	34	ps. 6,040,600	ps. 5,094,700	+	ps. 945,900	—	4	1	3½	NII		
Bolivar	174	Jan., 1942	4,960	+ 1,760	5	4,960	3,200	+	1,760	6 p.c. Deb.	5	5	9	NII		
Brazil	2,801	21.2.42	ps. 1,805,000	—	ps. 1,03,000	34	ps. 47,287,000	ps. 44,308,000	+	ps. 2,979,000	Bonds	7½	2½	10½	NII	
Buenos Ayres & Pacific	5,082	21.2.42	ps. 2,860,000	+ ps. 13,000	34	ps. 80,539,000	ps. 71,373,000	+	ps. 9,166,000	Ord. Stk.	8	1½	5	NII		
Buenos Ayres Great Southern	1,930	21.2.42	ps. 844,000	—	ps. 85,000	34	ps. 28,693,000	ps. 24,397,000	+	ps. 4,296,000	Ord. Stk.	10½	3½	8½	NII	
Buenos Ayres Western	3,700	21.2.42	ps. 1,717,500	—	ps. 343,500	34	ps. 59,872,050	ps. 50,162,450	+	ps. 9,709,600	—	8½	2½	6½	NII	
Central Argentine	Do.	—	—	—	—	—	—	—	—	Dfd.	2½	—	2½	NII		
Cent. Uruguay of M. Video	972	14.2.42	ps. 29,049	+	5,089	33	770,995	711,922	+	59,073	Ord. Stk.	9½	1	6½	NII	
Costa Rica	262	Jan., 1942	23,473	—	7,747	30	159,462	133,764	+	25,698	Stk.	15½	11½	13	14½	
Dorada	70	Jan., 1942	10,600	—	1,600	5	10,600	12,200	—	1,600	1 Mt. Db.	97	97	90½	6½	
Entre Rios	808	21.2.42	ps. 215,300	+ ps. 18,300	34	ps. 8,813,700	ps. 7,375,400	+	ps. 1,438,300	Ord. Stk.	6½	1½	5	NII		
Great Western of Brazil	1,030	21.2.42	10,700	—	1,900	8	93,000	94,500	—	1,500	Ord. Sh.	11½	1½	—	NII	
International of Cl. Amer.	794	Dec., 1941	\$519,619	+ \$73,379	52	\$5,617,278	\$5,544,439	—	\$72,839	—	—	—	—	—	NII	
Interoceanic of Mexico	—	—	—	—	—	—	—	—	—	1st Pref.	—	6d.	—	—	NII	
La Guaira & Caracas	224	Jan., 1942	6,430	+	305	5	6,430	6,125	+	305	—	—	—	—	NII	
Leopoldina	1,918	14.2.42	30,993	+ 4,530	7	191,489	157,493	+	33,996	Ord. Stk.	4	—	3½	NII		
Mexican	483	21.2.42	ps. 338,100	+ ps. 6,100	26	ps. 2,405,800	ps. 2,219,100	+	ps. 186,700	—	—	—	—	—	NII	
Midland of Uruguay	319	Dec., 1941	12,418	—	272	26	80,163	69,877	+	10,286	—	—	—	—	NII	
Nitrate	386	15.2.42	4,560	+ 1,524	7	15,596	13,288	+	2,308	Ord. Sh.	66½	1½	3½	3½	NII	
Paraguay Central	274	21.2.42	\$3,279,000	+ \$703,000	34	\$116,193,000	\$111,115,000	+	\$5,078,000	Pf. Li. Stk.	43½	29	42½	7½	NII	
Peruvian Corporation	1,059	Jan., 1942	80,429	+ 12,609	31	512,971	461,445	+	51,526	Pref.	6½	1½	7	NII		
Salvador	100	Dec., 1941	c 117,000	+ c 32,000	26	c 361,172	c 288,683	+	c 72,489	—	—	—	—	—	NII	
San Paulo	153½	22.2.42	34,125	—	100	8	263,625	262,887	—	738	Ord. Stk.	52	24½	43½	4½	
Talca	160	Jan., 1942	3,135	+ 840	31	30,895	19,435	+	11,460	Ord. Sh.	1	6½	1½	NII		
United of Havana	1,346	21.2.42	51,671	+ 4,427	34	740,866	597,854	+	143,012	Ord. Stk.	2½	—	3	NII		
Uruguay Northern	73	Dec., 1941	1,268	—	190	26	7,938	7,089	+	849	—	—	—	—	NII	
Canada																
Canadian National	23,562	21.2.42	1,196,400	+	207,400	8	8,899,800	7,132,200	+	1,767,600	—	—	—	—	—	NII
Canadian Northern	—	—	—	—	—	—	—	—	—	Perp. Dbs.	94	85½	—	—	—	NII
Grand Trunk	—	—	—	—	—	—	—	—	—	4 p.c. Gr.	104½	99½	—	—	—	NII
Canadian Pacific	17,139	21.2.42	869,800	+	222,800	8	6,392,800	4,949,400	+	1,443,400	Ord. Stk.	13½	7½	11½	NII	
India																
Baral Light	202	30.11.41	3,525	—	135	34	115,072	105,555	+	9,517	—	—	—	—	—	NII
Bengal & North Western	2,099	Jan., 1942	259,350	—	20,161	18	1,083,450	1,036,512	+	46,938	Ord. Stk.	345	253	336½	5½	NII
Bengal-Nagpur	3,269	10.10.41	234,750	—	14,924	27	4,993,938	4,533,077	+	460,861	—	101	95½	98	4½	NII
Madras & Southern Mahratta	2,939	30.11.41	190,350	+ 22,380	34	4,786,245	3,985,424	+	800,821	—	105½	101½	100	7½	NII	
Rohilkund & Kumaon	571	Jan., 1942	56,850	—	10,343	18	210,675	220,257	—	9,582	—	342	290	342½	4½	NII
South Indian	2,402	30.11.41	140,022	+	23,628	34	3,528,581	3,037,730	+	490,851	—	100	87	99½	3½	NII
Various																
Belra	204	Dec., 1941	68,922	—	—	13	219,615	—	—	—	—	—	—	—	—	NII
Egyptian Delta	610	31.10.41	11,565	+ 1,176	29	168,612	117,730	+	50,882	Pf. Sh.	1½	29½	2½	7	NII	
Manila	—	—	—	—	—	—	—	—	—	B. Deb.	68	45	50	—	—	NII
Midland of W. Australia	277	Sept., 1941	20,320	+ 1,375	9	58,977	43,885	+	15,092	Inc. Deb.	90½	85½	89½	6½	NII	
Nigerian	1,900	29.11.41	76,668	+ 11,298	34	1,827,367	1,314,395	+	512,972	—	—	—	—	—	—	NII
Rhodesia	2,442	Dec., 1941	469,566	—	—	13	1,428,208	—	—	—	—	—	—	—	—	NII
South Africa	13,291	10.1.42	763,854	+	43,192	41	31,148,376	28,177,585	+	2,970,791	—	—	—	—	—	NII
Victoria	4,774	Sept. 1941	1,052,397	+	161,210	13	3,053,542	2,648,904	+	404,638	—	—	—	—	—	NII

Note. Yields are based on the approximate current prices and are within a fraction of ½. Argentine traffic is given in pesos  
 † Receipts are calculated @ 1s. 6d. to the rupee      § ex dividend